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Separated Records Center

SITE: SUTTON Brook

BREAK: 11.09

OTHER: 18783

Material Safety Data Sheet

Manufacturer's Name: Plating Systems & Technologies, Inc.
317 North Mechanic Street
Jackson, Michigan 49201

Telephone: 517-783-4776 (24 Hour)

Section 1 - Identification

Trade Name: PS&T Brand High Efficiency Promoter
Product Code: 411
Chemical Name and Synonyms: Mixture
Chemical Family: Mixture
Formula: Proprietary

Section 2 - Hazardous Ingredients

<u>Identity</u>	<u>CAS Number</u>	<u>Percent</u>	<u>TLV</u>
Stannous Oxide	21651-19-4	<30	2.0 mg/m ³

This product contains no components which are listed by IARC or OSHA as carcinogens and is not listed in NTP.

Section 3 - Supplier Notification under Section 313

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

<u>CAS Number</u>	<u>Chemical Name</u>	<u>Percent By Weight</u>
(None)		

Section 4 - Physical Data

Boiling Point: not applicable Specific Gravity: 70-80#/ft³
Vapor Pressure (mm Hg): n/a Percent Volatile: 0
Vapor Density (Air = 1): n/a Evaporation Rate: n/a
Solubility In Water: approximately 70%
Appearance and Odor: dark grey product with sharp, somewhat sweet chemical odor.

0908-3220

TRW-01842

Section 5 - Fire and Explosion Hazard Data

Flash Point: not flammable Flammable Limits: Lel: n/a Uel: n/a
Extinguishing Media: not applicable
Special Fire Fighting Procedures: not applicable

Unusual Fire and Explosion Hazards: none

Section 6 - Health Hazard Data

Threshold Limit Value: (of Stannous Oxide): 2.0 mg/m³
Primary Routes of Exposure: Through skin
Effects of Overexposure: For skin: mild dermatitis; From
inhalation: irritation; From ingestion: no reports of toxicity

Emergency First Aid Procedures: Eye/skin contact: flush or wash
with water as required. For ingestion: induce vomiting; obtain
medical attention.

Section 7 - Reactivity Data

Stability: (Stable or Unstable): Stable
Conditions to Avoid: Not Applicable
Incompatibility (Materials to Avoid): Not Applicable
Hazardous Decomposition Products: Not applicable
Hazardous Polymerization: Will not occur
Conditions to Avoid: Not applicable

Section 8 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled:
Sweep up and discard.

Waste Disposal Method: Dispose of in accordance with all
applicable federal, state, and local regulations (This product
contains tin as Stannous Oxide).

PS&T MSDS for PS&T Brand High Efficiency Promoter
(Product Code No. 411)
Page 3 of 3
January 30, 1990

Section 9 - Special Protection Information

Respiratory Protection: Approved Dust Respirator
Ventilation: Local Exhaust: Recommended Special: n/a
Mechanical (General): Recommended Other: n/a
Protective Gloves: Rubber or plastic gloves are recommended
Eye Protection: Safety glasses or chemical safety goggles
Other Protective Equipment: Not required

Section 10 - Special Precautions

Precautions to be Taken In Handling and Storing:
Keep container closed when not in use.
Other Precautions: None required.

Section 11 - Transportation Data

D.O.T. : Not hazardous
Reportable Quantity: None
Freight Classification: Chemicals, N. O. I.

Section 12 - NFPA Hazard Ratings

Reactivity: 0 Fire/Flammability: 0 Health/Toxicity: 2
4: Extreme; 3: High; 2: Moderate; 1: Slight; 0: Insignificant

Prepared by: Thomas H. Rochester
Original Date: February 22, 1989
Reviewed and Revised: January 30, 1990

0908-3222

TRW-01844

MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME OR NUMBER (as it appears on label) 715-BP-8 Black Iron Oxide		GM COMMON CODE
MANUFACTURER'S NAME Magni Industries, Inc.		EMERGENCY TELEPHONE NO. (313)843-7855
ADDRESS (Number, Street, City, State and Zip Code) 2771 Hammond, Detroit, MI 48209		MANUFACTURER'S D-U-N-S NO 09-541-3050
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101) Paint - Flammable Liquid UN 1263		
ADDITIONAL HAZARD CLASSES (as applicable) n/a		
CHEMICAL FAMILY Paint Containing	FORMULA n/a	

SECTION II — INGREDIENTS (list all ingredients)

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as a Carcinogen in NTP, IARC or OSHA 1910(2) (specify)
11113-70-5	T		Basic Lead Silica Chromate	ACGIH (A2)
53-60-5	20-30		Dibasic Ester	n/a
1330-20-7	T		Xylol	n/a
13530-65-9	T		Zinc Chromate	IARC (2)
108-65-6	10-15		P.M. Acetate	n/a

SECTION III — PHYSICAL DATA

BOILING POINT 190°F 90°C	SPECIFIC GRAVITY (H ₂ O = 1)	1.38
VAPOR PRESSURE 5.0 mm Hg 20°C	PERCENT VOLATILE BY VOLUME (%)	15
VAPOR DENSITY (AIR = 1)	EVAPORATION RATE (Butyl Acetate = 1)	1
SOLUBILITY IN WATER Not soluble	pH =	n/a
APPEARANCE AND ODOR Black in color, odor-aromatic	IS MATERIAL LIQUID SOLID GAS PASTE POWDER	

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 98°F 37°C	method used	FLAMMABLE LIMITS	LEL 5	UEL
EXTINGUISHING MEDIA Foam, dry chemical or carbon dioxide. Water may not be used.				
SPECIAL FIRE FIGHTING PROCEDURES Fight as a volatile liquid fire. Use water to keep fire exposed containers cool to reduce pressure.				
UNUSUAL FIRE AND EXPLOSION HAZARDS Keep away from heat, sparks and open flames.				

TRW-01845

*Original Copy
of Book
6/14/85*

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Heatbath Corporation		EMERGENCY TELEPHONE NO. 413-543-3381
ADDRESS (Number, Street, City, State, and ZIP Code) 107 Front Street, Indian Orchard, Mass. 01151		
CHEMICAL NAME AND SYNONYMS Case Hardening Salt		TRADE NAME AND SYNONYMS PenKay Case 4
CHEMICAL FAMILY	FORMULA	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
C.A.S. HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
143-33-9				Sodium Cyanide	40
16893-85-9				Sodium Silicofluoride	4
7782-42-5				Graphite	1/2
					1
					2

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	N.A. *	SPECIFIC GRAVITY (H ₂ O=1)	2.2
VAPOR PRESSURE (mm Hg.)	"	PERCENT VOLATILE BY VOLUME (%)	None
VAPOR DENSITY (AIR=1)	"	EVAPORATION RATE (_____=1)	None
SOLUBILITY IN WATER	"		
APPEARANCE AND ODOR			
Gray powder. No odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA CO₂, foam.			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS Do not introduce nitrates, nitrites into the molten salt.			

*N.A. - Not applicable

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(Continued on reverse side)

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0908-3224

TRW-01846

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Cyanosis.

EMERGENCY AND FIRST AID PROCEDURES

External - Wash well with water.

Eyes - Flood with water. See physician.

Internal - Follow cyanide procedure. Call physician immediately or rush victim to hospital.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Acids, water, steam.

HAZARDOUS DECOMPOSITION PRODUCTS

Hydrogen cyanide (lethal gas).

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Sweep up. Dispose with other cyanide materials.

WASTE DISPOSAL METHOD

Destroy cyanide with oxidative method such as alkaline chlorination.

Neutralize to pH 8.0 - 8.5.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

X

OTHER

PROTECTIVE CLOTHING

Asbestos

EYE PROTECTION

Face shield, goggles

OTHER PROTECTIVE EQUIPMENT

Apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool, dry place away from acids and strong oxidants.

OTHER PRECAUTIONS

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Prepared: 9/18/84

By:

Herbert Brumer

Form OSHA-2

Rev. April 72

TRW-01847

0908-3225

712

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA

~~FREDERICK & SONS CHEMICAL COMPANY, INC.~~
538 Forest Street, Kearny, NJ 07032

Emergency Telephone Numbers:
8:00 AM - 5:00 PM EST

PEPTIZOID 143-NP

~~(201) 261-1111~~
~~201-261-1111~~

D.O.T. HAZARD CLASS - Corrosive Solid NDS
CHEMICAL FAMILY - Caustic cleaner
CHEMICAL NAME/SYNONYMS - ~~PEPTIZOID 143-NP~~
FORMULA - Mixture
MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs

Effective Date:
10-7-88

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - NA
VAPOR PRESSURE (mm Hg) - NA
VAPOR DENSITY (air=1) - NA
SOLUBILITY IN WATER - Complete to 32 oz/gal
SPECIFIC GRAVITY (H2O=1) - NA
VOLATILE BY VOLUME - NA
EVAPORATION RATE (H2O=1) - NA

APPEARANCE & ODOR:
0 white powder

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

EXTINGUISHING MEDIA:
This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:
Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Will react with some metals, i.e. aluminum, tin and zinc, to release flammable hydrogen gas.

NFPA HAZARD CLASSIFICATION:

Health (Blue) - 3
Flammability (Red) - 0
Reactivity (Yellow) - 1

DEGREE OF HAZARD

4=Extreme
3=High
2=Moderate
1=Slight
0=Insignificant

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SECTION 4 - REACTIVITY DATA

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STABILITY: Stable
 CONDITIONS TO AVOID: NA

INCOMPATIBILITY:
 Strong acids, flammable liquids, certain metals, and organic halogenated compounds. Contact with nitro compounds may form shock sensitive salts.

HAZARDOUS DECOMPOSITION PRODUCTS:
 None

HAZARDOUS POLYMERIZATION: Will not occur
 CONDITIONS TO AVOID: NA

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SECTION 5 - HAZARDOUS COMPONENTS

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PAINTS, PRESERVATIVES, AND SOLVENTS:
 NA
 ALLOYS AND METALLIC COATINGS:
 NA

HAZARDOUS COMPONENTS	CAS NUMBER	TLV	PEL	LD50	%
Sodium Hydroxide (Caustic Soda)	1310-73-2	C 2	2	240	15.2
Sodium Silicate	6834-92-0	C 2	2	600	10.0
rate Decahydrate	1303-96-4	5	NF	2660	11.3
Sodium Dodecylbenzene sulfonate	25155-30-0	NF	NF	650	1.77
Stoddard Solvent	64742-88-7	525	2950	NF	0.50

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- The indicated material, if any, is listed as a carcinogen or potential carcinogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

& - The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

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SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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SPILL & LEAK PROCEDURES:

Spilled powders may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to waste treatment area. Flush area with plenty of water. Dilute mineral acid may be used to neutralize final traces immediately after flushing.

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SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

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WASTE DISPOSAL METHODS:

Caustic waste solution should not be discharged into sewers or streams. Caustic should first be neutralized with dilute acid to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local waste disposal contractor.

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SECTION 7 - HEALTH HAZARD DATA

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ROUTES OF EXPOSURE

INHALATION: Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and even to the lung tissue which could produce chemical pneumonia depending upon severity of exposure.

SKIN CONTACT: This product is destructive to tissues contacted and produces severe burns.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

INGESTION: This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

EFFECTS OF OVEREXPOSURE

ACUTE: Corrosive to all body tissues with which it comes in contact.

CHRONIC: The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues.

EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding eyes apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

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SECTION 7 - HEALTH HAZARD DATA continued

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INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

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SECTION 8 - SPECIAL HANDLING PROCEDURES

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RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above TLV limit.

VENTILATION: Use adequate local exhaust ventilation where dust, mist, or spray may be generated, to maintain level below TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

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SECTION 9 - SPECIAL PRECAUTIONS

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HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong acids and flammable liquids. May react with tin, zinc, magnesium, and aluminum, generating hydrogen gas which is explosive.

FOR POWDERS:

1. To prepare solutions, this material dissolves with the liberation of much heat. Add material slowly with constant stirring, to avoid violent splattering.
2. Store in a cool dry area, in a closed container.

OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with the use of this information.

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC.
538 Forest Street, Kearny, NJ 07032

PEPTIZOID T&S

Emergency Telephone Numbers:

8:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

D.O.T. HAZARD CLASS - Cleaner Liquid NOS

CHEMICAL FAMILY - Cleaner

CHEMICAL NAME/SYNONYMS - PEPTIZOID T&S

FORMULA - Mixture

MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs

Effective Date:

05-21-87

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - > 212 F

VAPOR PRESSURE (mm Hg) - NA

VAPOR DENSITY (air=1) - NA

SOLUBILITY IN WATER - Complete

SPECIFIC GRAVITY (H2O=1) - 1.01

VOLATILE BY VOLUME - 70%

EVAPORATION RATE (H2O=1) - >1

APPEARANCE & ODOR:

Clear amber viscous liquid with mild odor.

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

NFPA HAZARD CLASSIFICATION:

Health (Blue) - 1
Flammability (Red) - 0
Reactivity (Yellow) - 0

DEGREE OF HAZARD

4=Extreme
3=High
2=Moderate
1=Slight
0=Insignificant

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SECTION 4 - REACTIVITY DATA

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STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Strong acids, strong oxidizers, chlorinated organic compounds.

HAZARDOUS DECOMPOSITION PRODUCTS:

Ammonia, carbon monoxide, and carbon dioxide may be formed on burning in a limited air supply.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

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SECTION 5 - HAZARDOUS COMPONENTS

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PAINTS, PRESERVATIVES, AND SOLVENTS:

NA

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS

CAS NUMBER

TLV

PEL

LD50

%

NONE

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- The indicated material, if any, is listed as a carcinogen or potential carcinogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

& - The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

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SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

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SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

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waste disposal contractor.

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SECTION 7 - HEALTH HAZARD DATA

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ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage. May also cause a decrease in alertness.

SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, throat, and stomach.

EFFECTS OF OVEREXPOSURE

ACUTE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis. May also cause liver, kidney, and lung injury.

EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

TRW-01854

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SECTION 8 - SPECIAL HANDLING PROCEDURES

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RESPIRATORY: Respiration protection is not required under normal use.
Use NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

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SECTION 9 - SPECIAL PRECAUTIONS

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HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids & oxidizers, chlorinated organic compounds.

OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with the use of this information.

ALL MAINT.
DET 250

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME Permatex Form-A-Gasket No. 4 Sealant (Permatex)		BOWMAN PART NO. 26802
SUPPLIER BOWMAN DISTRIBUTION, BARNES GROUP INC.		EMERGENCY TELEPHONE NO. (313) 291-8000
ADDRESS 850 East 72nd Street, Cleveland, OH 44103		DATE 7/9/86
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101) DOT ORM-D Consumer Commodity		
ADDITIONAL HAZARD CLASSES (as applicable) IATA Class 3 flammable liquid, UN 1866		
CHEMICAL FAMILY Sealant (mixture)	FORMULA N.A.	

SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-63-0	10-15		Isopropyl Alcohol	None Listed
1332-58-7	50-55		Clay (Kaolin)	None Listed
None	30-35		Modified Natural Resins	None Listed
1309-37-1	<1		Red Iron Oxide	None Listed

SECTION III - PHYSICAL DATA

BOILING POINT 180 °F ____ °C	SPECIFIC GRAVITY (H ₂ O = 1) 1.5		
VAPOR PRESSURE @ ____ °F ____ °C <input checked="" type="checkbox"/> mm Hg <input type="checkbox"/> psi	PERCENT VOLATILE BY VOLUME (%) Unknown	PERCENT SOLID BY WEIGHT (%) 80-90	
VAPOR DENSITY (AIR = 1) 2.07	EVAPORATION RATE (____ = 1) Unknown		
SOLUBILITY IN WATER Partial	pH = Unknown		
APPEARANCE AND ODOR Reddish-brown color, alcoholic odor.		IS MATERIAL: PASTE	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 60 °F ____ °C	method used Closed Cup	FLAMMABLE LIMITS	LEL 2%	UEL 12%
EXTINGUISHING MEDIA CO ₂ , Foam, Dry Chemical				
SPECIAL FIRE FIGHTING PROCEDURES None Known				
UNUSUAL FIRE AND EXPLOSION HAZARDS None Known				

26802

TRW-01856

0908-3234

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - Conditions to avoid Eye irritant; moderately toxic by ingestion. Vapor above TLV is irritating to eyes, nose, throat and can cause dizziness, nausea. Liquid is eye irritant.		THRESHOLD LIMIT VALUE 400 PPM for isopropanol PERMISSIBLE EXPOSURE LIMIT
		OTHER LIMIT
PRIMARY ROUTES OF ENTRY Inhalation <input checked="" type="checkbox"/> Skin Contact <input type="checkbox"/> Other (specify) eyes		
EMERGENCY AND FIRST AID PROCEDURES Ingestion: induce vomiting. See physician. Inhalation: remove to fresh air. Skin: wash with soap & water. Eyes: flush with water. Get medical help.		

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (materials to avoid) Strong oxidizers			
HAZARDOUS DECOMPOSITION PRODUCTS: None known			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scrape or wipe up and store in closed container. Clean area with isopropyl alcohol or 1,1,1-trichloroethane. Ventilate area and eliminate sources of ignition.	
WASTE DISPOSAL METHOD Landfill or incinerate following EPA and local regulations.	
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs) None	
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33) Flammable liquid UN 1993	
VOLATILE ORGANIC COMPOUND (VOC) (as packaged, minus water)	
<input type="checkbox"/> Theoretical _____ lb/gal 10-15%	<input type="checkbox"/> Analytical _____ lb/gal

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type) Adequate to avoid exceeding TLV.		
VENTILATION	LOCAL EXHAUST (specify rate)	SPECIAL
	MECHANICAL (general) (specify rate)	OTHER
PROTECTIVE GLOVES (specify type) None required		EYE PROTECTION (specify type) Recommended for large quantity use.
OTHER PROTECTIVE EQUIPMENT None		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not store near heat, sparks, or flame.	
OTHER PRECAUTIONS Avoid prolonged breathing of vapors and contact with eyes.	

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME Port-A-Seal • Form B • Sealant • No. 26804		BOWMAN PART NO. 26804
SUPPLIER BOWMAN DISTRIBUTION, BARNES GROUP INC.		EMERGENCY TELEPHONE NO. (216) 391-7200
ADDRESS 850 East 72nd Street, Cleveland, OH 44103		DATE 7/9/86
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101) DOT ORM-D Consumer Commodity		
ADDITIONAL HAZARD CLASSES (as applicable) IATA Class 3 flammable liquid, resin solution, flammable UN 1866		
CHEMICAL FAMILY Sealant (mixture)	FORMULA N.A.	

SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-63-0	10-15		Isopropyl Alcohol	None Listed
1332-58-7	30-35		Clay (Kaolin)	None Listed
None	50-55		Modified Natural Resins	None Listed

SECTION III - PHYSICAL DATA

BOILING POINT <u>180</u> °F _____ °C		SPECIFIC GRAVITY (H ₂ O = 1)		1.5	
VAPOR PRESSURE _____ 33 @ _____ °F _____ °C <input checked="" type="checkbox"/> mm Hg <input type="checkbox"/> psi		PERCENT VOLATILE BY VOLUME (%)		Unknown	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)		Unknown	
SOLUBILITY IN WATER		pH =		Unknown	
APPEARANCE AND ODOR Black color, alcoholic odor.				IS MATERIAL: PASTE	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ 60 °F _____ °C		method used Closed Cup		FLAMMABLE LIMITS		LEL 2%	UEL 12%
EXTINGUISHING MEDIA CO ₂ , Foam, Dry Chemical							
SPECIAL FIRE FIGHTING PROCEDURES None Known							
UNUSUAL FIRE AND EXPLOSION HAZARDS None Known							

26804

0908-3236

TRW-01858

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - Conditions to avoid Eye irritant; moderately toxic by ingestion. Vapor above TLV is irritating to eyes, nose, throat and can cause dizziness, nausea. Liquid is eye irritant.	THRESHOLD LIMIT VALUE 400 PPM for isopropyl alcohol PERMISSIBLE EXPOSURE LIMIT OTHER LIMIT
PRIMARY ROUTES OF ENTRY Inhalation <input checked="" type="checkbox"/> Skin Contact <input type="checkbox"/> Other (specify) eyes	
EMERGENCY AND FIRST AID PROCEDURES Ingestion: induce vomiting. Call physician. Inhalation: remove to fresh air. Skin: wash with soap & water. Eyes: flush with water. Get medical help.	

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (materials to avoid) Strong oxidizers			
HAZARDOUS DECOMPOSITION PRODUCTS: None known			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scrape or wipe up and store in closed containers. Clean area with isopropyl alcohol or 1,1,1-trichloroethane. Ventilate area and eliminate sources of ignition.	
WASTE DISPOSAL METHOD Landfill or incinerate following EPA and local regulations.	
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs) None	
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33) Flammable liquid UN 1993	
VOLATILE ORGANIC COMPOUND (VOC) (as packaged, minus water)	
<input checked="" type="checkbox"/> Theoretical _____ lb/gal 10-20%	<input type="checkbox"/> Analytical _____ lb/gal

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type) Adequate to avoid exceeding TLV.		
VENTILATION	LOCAL EXHAUST (specify rate)	SPECIAL
	MECHANICAL (general) (specify rate)	OTHER
PROTECTIVE GLOVES (specify type) None required		EYE PROTECTION (specify type) Recommended for large quantities.
OTHER PROTECTIVE EQUIPMENT None		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not store near heat, sparks, or flame.	
OTHER PRECAUTIONS Avoid prolonged breathing of vapors and contact with eyes.	

26804

0908-3237

TRW-01859

Bowman Distribution
Barnes Group Inc

P. O. Box 6908
Cleveland, OH 44101
Tel. (216) 391-7200



TRW
265 3RD ST
CAMBRIDGE, MA 02142

Attention: Safety Officer

In compliance with the Federal OSHA Hazard Communication Standard and various state "Right-To-Know" laws, Bowman Distribution is providing **Material Safety Data Sheets** for your use. These sheets contain the information your company will use when training your employees regarding specific health hazards that may affect them in the workplace.

The sheets contained are for products your company has recently purchased. New sheets will be supplied when different products covered by these laws are ordered or if the formulation changes on a product that you have previously acquired.

Enclosed are MSDS's on the following Bowman part numbers:

26804

DU PONT

E. & F. KING & CO., INCORPORATED
640 PLEASANT ST.
NORWOOD, MASS.

Hydrogen Peroxide 50%

RECEIVED

MAR 15 1979

MATERIAL SAFETY DATA SHEET

PROJECT 21-21-1-100

SECTION I

MANUFACTURER'S NAME E. & F. King & Co., Inc.		EMERGENCY TELEPHONE NO. 600
ADDRESS (Number, Street, City, State, and ZIP Code) Wilmington, Delaware 19898		
CHEMICAL NAME AND SYNONYMS Hydrogen peroxide, peroxide (30%, 35% or 50%)		TRADE NAME AND SYNONYMS Tysul [®] WV, CG peroxygen compounds*
CHEMICAL FAMILY Peroxide	FORMULA H ₂ O ₂	

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Less than 52% hydrogen peroxide in water (*30%, 35% or 50% hydrogen peroxide in water.)

SECTION III PHYSICAL DATA

BOILING POINT	106-114 C 222-237 F	SPECIFIC GRAVITY (H ₂ O=1)	1.1-1.2
VAPOR PRESSURE (mm Hg)	25-18	PERCENT VOLATILE BY VOLUME (%)	approx. 99.8
VAPOR DENSITY (AIR=1)	Not determined	EVAPORATION RATE	(Ether = 1) Less than 1
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR Clear, colorless liquid with a slightly pungent odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used) Non-flammable	FLAMMABLE LIMITS Not applicable	LEL	UEL
EXTINGUISHING MEDIA Use water to fight fires in which this material is involved.		AUTO. IGNIT. TEMP.	
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing, including chemical safety goggles and self-contained breathing apparatus in emergencies.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Spontaneous combustion can occur if allowed to dry in contact with combustible materials or clothing. Explosive mixtures can result with organic chemicals, particularly if hydrogen peroxide is concentrated by evaporation.			

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (ACGIH) 1 ppm	TIME WEIGHTED AVERAGE (OSHA) 1 ppm (90% H ₂ O ₂)
EFFECTS OF OVEREXPOSURE Causes eye burns; effects may be delayed. Causes skin irritation.	
EMERGENCY AND FIRST AID PROCEDURES In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Remove and wash contaminated clothing and shoes promptly and thoroughly.	

TRW-01861

SECTION VI REACTIVITY DATA			
STABILITY	UNSTABLE	X	CONDITIONS TO AVOID Contamination from any source may cause rapid decomposition, with generation of large quantities of oxygen gas and high pressures.
	STABLE		
INCOMPATIBILITY (Materials to avoid) Heavy metals, organic materials (especially vinyl monomers), and dust.			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES			
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Flush to an approved chemical sewer by flooding with water applied quickly to entire spill area.			
WASTE DISPOSAL METHOD			
SECTION VIII SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specific Type) None for normal use.			
VENTILATION	LOCAL EXHAUST Maintain adequate ventilation		SPECIAL Self-contained breathing apparatus for emergencies.
	MECHANICAL (General) Unknown		OTHER
PROTECTIVE GLOVES Neoprene, butyl rubber or vinyl		EYE PROTECTION Chemical safety goggles or face shield.	
OTHER PROTECTIVE EQUIPMENT Safety hat, neoprene safety shoes or boots.			
SECTION IX SPECIAL PRECAUTIONS			
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid contact with eyes, skin, clothing and combustible materials. Avoid contamination from any source, including metals, dust and organic materials. Store in cool, ventilated, non-combustible area in vented containers. Have water source available for diluting.			
OTHER PRECAUTIONS			

E-13319

Date: 10/77

For more information refer to: Du Pont "Storage and Handling of Hydrogen Peroxide Solutions" E-11820

Manufacturing Chemists Association SD-53
National Fire Protection Association Manuals 49, 491M

TRW-01862

0908-3240



P.O. Drawer 1410 - 1600 E. Hill St., Long Beach, CA 90801

Contact: Safety Department - Telephone: (213) 427-5471

February 1989

WARNING STATEMENT

DANGER! Extremely Flammable. Keep away from heat, sparks and open flame.
Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air and collects in low levels.
Liquid may cause freeze burn similar to frostbite.

I. Product Identification

Product Name: Petrolane Propane
Chemical Name: Propane
Synonyms: LP-Gas, Bottled Gas
Chemical Family: Paraffinic Hydrocarbon
Chemical Formula: C_3H_8
DOT Proper Shipping Name: Liquefied Petroleum Gas
DOT Hazard Class: Flammable Gas
DOT I.D. Number: UN1075

Transportation Emergency Telephone:
800-424-9300 (CHEMTREC)

NFPA Classification:

Health	1	Slightly Toxic
Fire	4	Extremely Flammable
Reactivity	0	Stable

II. Hazardous Ingredients

Component	CAS Number	%	OSHA PEL	ACGIH TLV
Ethane	74-84-0	0-6	None established	Simple asphyxiant
Propane	74-98-6	87-97	1000 ppm (8hr)	Simple asphyxiant
Propylene	115-07-1	0-5	None established	Simple asphyxiant
Butane	106-97-8	0-2.5	None established	800 ppm (8 hr)

III. Physical Data

Boiling Point: -44°F
Melting Point: -309°F
Vapor Pressure: 208 psig (max.) @ 100°F
Vapor Density (Air=1): 1.5
Specific Gravity ($H_2O=1$): 0.504

% Volatile by Volume: 100%
Solubility in Water: Insoluble
Evaporation Rate(Bu Ac=1): N/A
Gas Volume @ Atm. Pressure & 60°F
(Cu. ft. gas/gal. liquid): 36.4

Appearance and Odor: Colorless, odorless in pure form.

Propane contains a foul smelling, skunk-like warning agent(odorant). The odorant is effective, in most instances, but not everyone can smell the odor. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system can reduce the propane odor level. No odorant will be 100% effective in all circumstances. If odor level appears to be weak, notify propane supplier immediately.

IV. Fire and Explosion Data

Flash Point (Method Used): -156°F (estimated)
Flammable Limits (% Volume in Air): Lower 2.1% Upper 9.5%

Extinguishing Media: Dry chemical, foam or CO_2 for small fires. Stop flow of gas first.

Special Fire Fighting Procedures and Precautions: Eliminate sources of ignition. Evacuate area. Notify fire department. Allow only trained, properly protected personnel in area. Shut off source of gas, if possible. Allow fire to burn itself out after gas flow is shut off. High volume water supply can be used to cool heat-exposed pressure containers and nearby equipment. Approach a flame enveloped container from the side, never the head ends. Use extreme caution when applying water to a container which has been exposed to heat or flame for more than a short time. Shock of cool water on hot metal could cause container rupture. For uncontrollable fires and when flame is impinging on container, withdraw all personnel and evacuate surrounding vicinity immediately.

Unusual Fire and Explosion Hazards: Products of combustion may yield carbon monoxide, a toxic gas. Uncontrolled vapors spread rapidly, are heavier than air and are extremely flammable.

V. Reactivity Data

Stability: Stable Conditions to Avoid: High heat, sparks, open flame
Materials to Avoid: Strong oxidizing agents
Hazardous Decomposition Products: Incomplete combustion can cause carbon monoxide, a toxic gas.
Hazardous Polymerization: Will not occur Conditions to Avoid: None

VI. Health Hazard Data

Product is not listed as carcinogenic by NTP, IARC or OSHA. Product may contain a trace, but detectable amount of benzene, a chemical listed by the State of California and known to cause cancer or reproductive toxicity.

Routes of Entry / Acute Effects of Overexposure:

Inhalation: Exposure to high concentrations of the vapor causes dizziness, drowsiness, nausea or unconsciousness due to anesthetic properties.

Skin Contact: Liquid can cause freeze burns similar to frostbite if contact with skin occurs. No skin absorption is expected.

Eye Contact: Liquid can cause freeze burns if contact with eyes occurs.

Ingestion: Ingestion is not expected to occur in normal use.

Chronic Effects of Overexposure: No abnormal reactions reported following exposure to 1000 ppm for 8 hours per day, 5 days per week, for 2 weeks.

Medical Conditions Generally Aggravated by Exposure: Persons with chronic respiratory diseases should avoid exposure.

VII. Emergency and First Aid Procedures

Eye Contact: Flush with water. Obtain medical assistance if contact with liquid has occurred.

Skin Contact: If freeze burn occurs, remove contaminated clothes, shoes and jewelry. Immerse burned area in warm (not hot) water. Keep immersed. Call for medical assistance.

Inhalation: Remove victim from further exposure and into fresh air. Provide oxygen if breathing is labored. If victim is unconscious, seek immediate medical attention. If breathing has stopped, give artificial respiration.

Ingestion: Not expected to occur in normal use.

VIII. Spill or Leak Procedures

Product is extremely flammable. Vapor is heavier than air and may collect at lower levels. Flammable concentrations may be present below nose level. If there is a leak but no fire, do not light the escaped gas. Eliminate all ignition sources. Do not smoke, use a nearby phone or actuate electrical switches. Evacuate the area. If possible, remove leaking container to safe area. Stop flow of gas or allow vapor to disperse in a safe area. Water spray can be used to help dilute vapor concentration in air.

Dispose of gas only by controlled burning in compliance with local laws and regulations.

IX. Handling and Storage Precautions

Store in an authorized location (outside, detached storage is preferred) with adequate ventilation. Keep away from heat and ignition sources. Inspect cylinders frequently for leaks, dents, gouges and corrosion with emphasis on bottom of cylinder. Store cylinders in upright position or with pressure relief valves in vapor space. Do not drop or abuse cylinders. Keep container valve closed and plugged when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue, so they should be treated as if they are full.

X. Personal Protection Information

Ventilation: Use adequate ventilation to maintain exposures below recommended limits.

Respiratory Protection: Use a NIOSH-approved respirator if area is thought to contain unknown concentration of gas.

Eye Protection: Use safety goggles or safety glasses with side shields.

Protective Clothing: No special garments are necessary, but avoid skin contact with liquid because of possibility of freeze burn. Propane resistant gloves are recommended.

XI. Communication with Employees and Purchasers

This Material Safety Data Sheet (MSDS) alerts the reader to the potential safety and health hazards of propane. It also contains valuable reference material relating to the safe use and handling of the product. Make sure that this information is shared with all employees and purchasers who use or handle the product. It is an important part of the OSHA hazard communication program.

This information is believed to be accurate as of the date of issue, but is offered without guarantee. Conditions of use and suitability for use are beyond Company control, therefore, all risks of use of the product are assumed by the user. COMPANY EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE. Company assumes no responsibility for any injuries or damages caused by the product even if safety procedures are followed as outlined herein. Nothing herein is intended to be construed as permission or recommendation for use of the product in any manner which might infringe existing patents.

*Filed under
Cook Draw 4625*

Neil Ballard

Page 1

MATERIAL SAFETY DATA SHEET

COOK'S INDUSTRIAL LUBRICANTS
5 NORTH STILES STREET
LINDEN, N. J. 07036

REVISION DATE
13-JUN-88

DATE ISSUED
25-OCT-88

IDENTIFICATION AND EMERGENCY INFORMATION

COOK'S PRODUCT NAME:
Cook-Draw 4625

COOK'S PRODUCT #:
J5P701G

CHEMICAL NAME:
Petroleum-based E. P. Drawing Oil

CAS #'S:
Mixture

PRODUCT APPEARANCE AND ODOR:
Amber liquid, petroleum odor

CHEMICAL FAMILY:
Petroleum hydrocarbon

SYNONYMS:
Petroleum-based lubricating oil.

EMERGENCY TELEPHONE:
(201) 862-2500

COMPONENTS AND HAZARD INFORMATION

COMPONENTS:	W/W	HAZARD DATA (TLV, LD50, LC50, ETC.):
Petroleum-based lubricating oil CAS #'S 64742-53-6 or 64742-52-5		TLV 5 mg/meter cubed (as an oil mist)
Chlorinated Paraffin CAS #'s 68920-70-7		n/e
Proprietary additives		n/e

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health	Flammability	Reactivity	Basis
2	1	1	---

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

ICC: Compound or lubricant. Metal cutting, drawing or drilling.
Dry, liquid or paste. NOI

EMERGENCY FIRST AID

EYE CONTACT:

If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.

SKIN CONTACT:

In case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.

SECTION VII PRECAUTIONS FOR SAFE HANDLING USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: IN CASE OF SPILL, CONTAIN AND RECOVER BULK FLUID. DO NOT USE WATER. SOAK UP RESIDUE WITH SAND, EARTH OR OTHER INERT MATERIAL. PUT IN A SUITABLE CONTAINER. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. AVOID CONTAMINATION OF SEWERS AND WATERWAYS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: AVOID CONTACT WITH EYES, SKIN AND CLOTHING. REMOVE CONTAMINATED CLOTHING. LAUNDER BEFORE REUSE. WASH THOROUGHLY AFTER HANDLING.

OTHER PRECAUTIONS: SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUE, FOLLOW LABEL WARNINGS EVEN AFTER CONTAINER IS EMPTIED. DO NOT MIX THIS PRODUCT WITH NITRITES DUE TO THE POSSIBILITY OF A REACTION PRODUCING NITROSAMINES. AVOID BREATHING MIST OR HOT VAPORS.

SECTION VIII CONTROL MEASURES

RESPIRATORY PROTECTION (Specify type)

NIOSH APPROVED RESPIRATOR IF EXPOSED TO HOT VAPOR OR MIST.

VENTILATION

LOCAL EXHAUST

RECOMMENDED

SPECIAL

N/A

MECHANICAL (General)

N/A

OTHER

N/A

PROTECTIVE GLOVES

NEOPRENE-OIL IMPERVIOUS

EYE PROTECTION

SAFETY GLASSES OR GOGGLES

OTHER PROTECTIVE EQUIPMENT

USE AS REQUIRED TO AVOID SKIN CONTACT.

HYGENIC PRACTICES: WASH AFTER HANDLIN.

WE BELIEVE THE STATEMENTS, TECHNICAL INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE RELIABLE, BUT THEY ARE GIVEN WITHOUT WARRANTY OR GUARANTEE OF ANY KIND, EXPRESSED OR IMPLIED, AND WE ASSUME NO RESPONSIBILITY FOR ANY LOSS, DAMAGE, OR EXPENSE, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THEIR USE.

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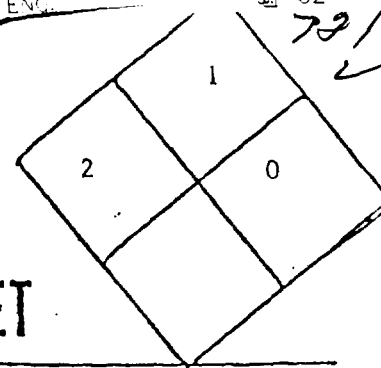
MASSACHUSETTS MSDS

Form Approved
Budget Bureau No. 44-R1387

U.S. DEPARTMENT OF LABOR
WORKPLACE STANDARDS ADMINISTRATION
 Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

2021-6161



FORMULA / TRADE SECRET		SECTION I	
MANUFACTURER'S NAME FRANKLIN PARK CHEMICAL		EMERGENCY TELEPHONE NO. 310-220-0000	
ADDRESS (Number, Street, City, State, and ZIP Code) BOX 46030 - FRANKLIN PARK, CLEVELAND, OHIO 44146			
IDENTITY TUF-DRAW 2806NF		DATE PREPARED 4/26/89	
CHEMICAL FAMILY PETROLEUM DISTILLATES			

SECTION II HAZARDOUS INGREDIENTS			
HAZARDOUS COMPONENTS:	OSHA PEL	ACGIH TLV.	%
SEVERELY HYDROTREATED NAPHTHENIC DISTILLATES	TWA 3 5mg/M ³	TWA 3 5mg/M ³ STEL 3 10mg/M ³	20-40
CAS #64742-52-5 AND CAS #64742-53-6			
TRIETHANOLAMINE CAS #102-71-6	NOT ESTABLISHED		1-5
PROPRIETARY INGREDIENTS NOT FOUND ON THE MOST RECENT MSL.			

SECTION III PHYSICAL DATA			
BOILING POINT (°F.)	>415°F	SPECIFIC GRAVITY (H ₂ O=1)	1.068
VAPOR PRESSURE (mm Hg.) (70°F.)	<1	PERCENT VOLATILE BY VOLUME (%)	<2%
VAPOR DENSITY (AIR=1)	>1	EVAPORATION RATE (BUTYL = 1)	<1
SOLUBILITY IN WATER	EMULSIFIABLE	ACETATE	8.6
APPEARANCE AND ODOR	AMBER OIL WITH PETROLEUM ODOR	MELTING POINT	<30°F.

SECTION IV FIRE AND EXPLOSION HAZARD DATA							
FLASH POINT (Method used)	325°F. (ASTM D-92)	FLAMMABLE LIMITS	<table border="1"> <tr> <td>LeI</td> <td>UeI</td> </tr> <tr> <td colspan="2">NOT DETERMINED</td> </tr> </table>	LeI	UeI	NOT DETERMINED	
LeI	UeI						
NOT DETERMINED							
EXTINGUISHING MEDIA	WATER FOG, DRY CHEMICAL, CO ₂ , OR FOAM		AUTOIGNITION TEMP. >450°F.				
SPECIAL FIRE FIGHTING PROCEDURES WEAR SELF CONTAINED BREATHING APPARATUS.							
KEEP FIRE EXPOSED CONTAINERS COOL WITH WATER.							
UNUSUAL FIRE AND EXPLOSION HAZARDS HOT VAPORS FORM EXPLOSIVE MIXTURES WITH AIR.							

0908-3245

TRW-01867

SECTION V. REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	SPARKS AND OPEN FLAMES
COMPATABILITY (Materials to avoid)			
STRONG ACIDS AND OXIDANTS			
HAZARDOUS DECOMPOSITION PRODUCTS UPON COMBUSTION:			
CO, CO ₂ , HCl, OXIDES OF SULFUR AND NITROGEN			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	NONE

SECTION VI HEALTH HAZARD DATA

ROUTE(S) OF ENTRY:	<u>INHALATION?</u>	<u>SKIN?</u>	<u>INGESTION?</u>
	X	X	X
HEALTH HAZARDS (ACUTE & CHRONIC): CAUSES IRRITATION: MAY BE SKIN DEFATTER UPON PROLONGED OR REPEATED CONTACT. CAUSES EYE IRRITATION. INHALATION OF OIL MIST MAY CAUSE MILD RESPIRATORY IRRITATION. INGESTION: SMALL AMOUNTS ASPIRATED INTO LUNGS DURING INGESTION OR VOMITING MAY CAUSE CHEMICAL PNEUMONITIS.			
CARCINOGENICITY:	<u>NTP?</u>	<u>IARC MONOGRAPHS?</u>	<u>OSHA REGULATED?</u>
	NOT LISTED	NOT LISTED	NOT LISTED

SIGNS & SYMPTOMS OF EXPOSURE: OIL MIST INHALATION MAY CAUSE DIZZINESS, NAUSEA AND DIFFICULTY BREATHING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: SENSITIVE DRY SKIN.

EMERGENCY AND FIRST AID PROCEDURES: IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINS. CALL A PHYSICIAN. WASH SKIN WITH SOAP AND WATER. IF SWALLOWED DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION. REMOVE FLUID SOAKED CLOTHING AND SHOES. LAUNDRY BEFORE REUSE. IF INHALED, REMOVE TO FRESH AIR AND GIVE ARTIFICIAL RESPIRATION IF NECESSARY. CALL A PHYSICIAN.

TRW-01868

0908-3246

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

REAGENT ~~PHENOLPHTHALEIN INDICATOR~~ CODE 212 (PAGE 1 OF 3)
MASS. REG.# EFFECTIVE DATE 02-16-91
PRINTED: 01-31-98
REVISIONS TO SECTIONS: -;EDIT:APPENDIX

REAGENT APPLICATION : FIELD TEST REAGENT

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC REAGENT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

ETHYL ALCOHOL(ETHANOL)***CAS#64-17-5;FLAMMABLE;EYE IRRITANT;MAY CAUSE DEFATTING DERMATITIS,DIZZINESS AND HEADACHE;PEL/TLV:1000PPM. (41.0-50.0%)

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 5.6	ODOR: ALCOHOL
FL.PT.(DEG.F): 78.8	SETA(CC)	SP.GR.(70F)OR DENSITY: 0.930
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: ND		%SOLUBILITY(WATER): 100
EVAP.RATE: <1 ETHER=1		APPEARANCE: COLORLESS
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): ND

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

REAGENT: PHENOLPHTHALEIN INDICATOR

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS, GASES, MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURE MAY CAUSE CNS DEPRESSION; MAY CAUSE DEFATTING-TYPE DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

EXCESSIVE DERMAL EXPOSURE CAUSES DEFATTING AND DRYING OF SKIN; EXCESSIVE INHALATION OF VAPORS CAUSES DIZZINESS, HEADACHE AND NAUSEA.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

GENERAL-DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM

SPECIFIC- DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

GENERAL-VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

SPECIFIC- REMOVE IGNITION SOURCES. FLUSH AREA WITH WATER. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

GENERAL-WATER CONTAMINATED WITH THIS REAGENT MAY BE SENT TO A SANITARY SEWER, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT

REAGENT (AS IS)- INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, OR FOAM. WATER SPRAY SHOULD BE USED ONLY TO COOL FIRE-EXPOSED CONTAINERS AND DISPERSE VAPORS.

REAGENT: PHENOLPHTHALEIN INDICATOR

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT REAGENT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP CONTAINER CLOSED WHEN NOT IN USE.

KEEP AWAY FROM FLAMES OR SPARKS. BOND CONTAINERS DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR ABOVE THE PRODUCT FLASH POINT.

HANDLING INSTRUCTIONS***

FLAMMABLE. STORE IN EXPLOSIVE PROOF AREA WHERE ELECTRICAL EQUIPMENT MEETS N.F.P.A. CODE

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D001=IGNITABLE

...DOT HAZARD/UN# /ER GUIDE# IS: FLAMMABLE LIQUID UN1993/#27

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: DELAYED(CHRONIC) AND FIRE

NFPA/HMIS : HEALTH - 1 ; FIRE - 3 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

0908-3249

TRW-01871



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EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Phosphor 1.25%		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 505
DESCRIPTION	CAS NO.	
Metal	Not assigned/Mixture	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin, or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Goggles Gloves Impervious Other NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} = 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Tin	Dust	2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung (pneumoconiosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
Not Applicable	Non-combustible solid		N/A	N/A
EXTINGUISHING MEDIA				
Use extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES				
Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	
None established for mixture (copper fume 0.2 mg/m ³ , tin 2 mg/m ³ , ACGIH 1985-86).	
SYMPTOMS OF OVER EXPOSURE	
Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever	
DUST OR FUME: WASH WITH EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.

Chemical

CAS No.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Not carcinogenic by oral, dermal or inhalation routes
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY	Not known to be mutagenic
ACUTE INHALATION LC 50	No data for alloy	EYE IRRITATION	Dust is irritating
		PRIMARY SKIN IRRITATION	Dust may be irritant
PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume			
EFFECTS OF ACUTE EXPOSURE Skin, eye and mucous membrane irritation, respiratory irritation, metal fume fever			
EFFECTS OF CHRONIC EXPOSURE None expected under proper industrial handling conditions. Chronic exposure may cause liver or kidney or spleen effects, accumulation of dust in lungs.			

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS

Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X	UNSTABLE	AT	_____ °C	_____ °F	HAZARDOUS POLYMERIZATION	MAY OCCUR
							WILL NOT OCCUR X
CONDITIONS TO AVOID		Presence of carbon monoxide during melting					
INCOMPATIBILITY (Material to Avoid)		(Dust and fume) acetylene, chlorine					
HAZARDOUS DECOMPOSITION PRODUCTS		Copper fume, tin fume					

SECTION X - PHYSICAL DATA

MELTING POINT	1900° F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H ₂ O = 1)	*	pH	N/A	VAPOR DENSITY (Air = 1)	N/A
* DENSITY	.321 pounds/in ³				

INFORMATION FURNISHED BY: Environmental Hygiene
and Toxicology
(203) 789-5436

DATE March 19, 1986

Department of Environmental Hygiene and Toxicology
(203) 789-5436

Olin CORPORATION

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OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

1051

0908-3251

TRW-01873



OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Phosphor 598 A		
CHEMICAL FAMILY Copper	FORMULA Mixture	TRADE NAME Alloy 510
DESCRIPTION Metal		CAS NO. Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eye Goggles Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fume 0.1 mg/m ³	TDLO = 120 ug/kg (human)	No data	Dust or fume: metal fume fever, respiratory irritation
Tin	Dust 2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung (pneumoconiosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD Not applicable	OSHA CLASSIFICATION Non-combustible solid	FLAMMABLE EXPLOSIVE LIMITS	LOWER N/A	UPPER N/A
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE None established for mixture (copper fume 0.2 mg/m ³ , tin 2 mg/m ³ ACGIH 1985-86).	
SYMPTOMS OF OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, nausea	
SKIN	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

Chemical

CAS No.

TRW-01874

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Not carcinogenic by oral, dermal or inhalation routes
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY	Not known to be mutagenic
ACUTE INHALATION LC 50	No data for alloy	EYE IRRITATION	Dust is irritating
		PRIMARY SKIN IRRITATION	Dust may be an irritant
PRINCIPAL ROUTES OF ABSORPTION			
Inhalation of dust or fume			
EFFECTS OF ACUTE EXPOSURE			
Skin, eye and mucous membrane irritation, respiratory irritation, metal fume fever			
EFFECTS OF CHRONIC EXPOSURE			
None expected under proper industrial handling conditions. Chronic exposure may cause liver or kidney or spleen effects, accumulation of dust in lungs.			

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS

Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X UNSTABLE	AT _____ °C _____ °F	HAZARDOUS POLYMERIZATION	MAY OCCUR
				WILL NOT OCCUR X
CONDITIONS TO AVOID		Presence of carbon monoxide during melting		
INCOMPATIBILITY (Material to Avoid)		(dust and fume) acetylene, chlorine		
HAZARDOUS DECOMPOSITION PRODUCTS		copper fume, tin fume		

SECTION X - PHYSICAL DATA

MELTING POINT	1750°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H ₂ O = 1)	*	pH	N/A	VAPOR DENSITY (Air = 1)	N/A
* DENSITY .320 lbs./in ³					

INFORMATION FURNISHED BY: Environmental Hygiene
and Toxicology
(203) 789-5436

DATE March 27, 1986

Department of Environmental Hygiene and Toxicology
(203) 789-5436

Olin CORPORATION

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EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road

Stamford, Conn. 06904

FLAMMABILITY



MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Phosphor Bronze		
CHEMICAL FAMILY Copper	FORMULA	TRADE NAME Alloy 511
DESCRIPTION Metal		CAS NO.

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Avoid breathing dust or fumes. Do not take internally.	
CORROSIVE ACTION ON MATERIALS (Metals, Plastic, Rubber, Etc.)	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Dust - goggles Gloves Other	As required to keep airborne concentrations of copper dust below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX. %	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg/m ³ Fume 0.1 mg/m ³			Gastro-intestinal
Tin		Dust 2 mg/m ³			Mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
EXTINGUISHING MEDIA Not Applicable				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Not Applicable				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE None established.	
SYMPTOMS OF OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever	
EMERGENCY FIRST-AID PROCEDURES	
SKIN	Flush thoroughly with water.
EYES	Flush with water for 15 minutes, call a physician.
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION	Remove victim to fresh air, call a physician.

Chemical Alloy 511

CAS No.

CHEMICAL NAME Alloy 511

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	CARCINOGENIC	Not known to be carcinogenic
ACUTE ORAL TD _{LO}	MUTAGENIC	Not known to be mutagenic
ACUTE DERMAL LD 50	EYE IRRITATION	Dust is irritating
ACUTE INHALATION LD 50	PRIMARY SKIN IRRITATION	Dust is irritating
PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume		
EFFECTS OF ACUTE EXPOSURE Congestion, gastro-intestinal distress, chills, fever, dermatitis		
EFFECTS OF CHRONIC EXPOSURE May cause liver, kidney or spleen damage, anemia, dermatitis		

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

<p>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</p> <p>Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.</p>
<p>WASTE DISPOSAL METHOD</p> <p>Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.</p>

SECTION VIII - REACTIVITY DATA

STABLE	<input checked="" type="checkbox"/> UNSTABLE	AT _____ °C _____ °F	HAZARDOUS POLYMERIZATION	MAY OCCUR
				WILL NOT OCCUR <input checked="" type="checkbox"/>
CONDITIONS TO AVOID				
INCOMPATIBILITY (Materials To Avoid)			Dust and fume - acetylene, chlorine	
HAZARDOUS DECOMPOSITION PRODUCTS			Copper fume	

SECTION IX - PHYSICAL DATA

MELTING POINT	1785°F	VAPOR PRESSURE		VOLATILES
BOILING POINT		SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE
SPECIFIC GRAVITY (H ₂ O = 1)		pH		VAPOR DENSITY (Air = 1)
DENSITY	.320 pounds/in ³			

INFORMATION FURNISHED BY:

A. L. Gaudreau
(203) 789-5434

DATE September 4, 1984

Department of Environmental Hygiene and Toxicology



CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

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TRW-01877

0908-3255



OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Phosphor Bronze, 8%		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 521
DESCRIPTION	CAS NO.	
Metal	Not assigned/mixture	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eye: Goggles Glove: Impervious Other: NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fume 0.1 mg/m ³	TDLO = 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Tin	Dust 2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung (pneumoconiosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
Not applicable	Non-combustible solid		N/A	N/A
EXTINGUISHING MEDIA				
Use extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES				
Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	
None established for mixture (copper fume 0.2 mg/m ³ , tin 2 mg/m ³ ACGIH 1985-86).	
SYMPTOMS OF OVER EXPOSURE	
Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever	
EMERGENCY FIRST-AID PROCEDURES	
SKIN	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

Chemical

CAS No.

TRW-01878

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Not carcinogenic by oral, dermal or inhalation routes
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY	Not known to be mutagenic
ACUTE INHALATION LC 50	No data for alloy	EYE IRRITATION	Dust is irritating
		PRIMARY SKIN IRRITATION	Dust may be irritant
PRINCIPAL ROUTES OF ABSORPTION			
Inhalation of dust or fume			
EFFECTS OF ACUTE EXPOSURE			
Skin, eye and mucous membrane irritation, respiratory irritation, metal fume fever			
EFFECTS OF CHRONIC EXPOSURE			
None expected under proper industrial handling conditions. Chronic exposure may cause liver or kidney or spleen effects, accumulation of dust in lungs.			

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS

Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X UNSTABLE	AT	°C	°F	HAZARDOUS POLYMERIZATION	MAY OCCUR
						WILL NOT OCCUR X
CONDITIONS TO AVOID Presence of carbon monoxide during melting						
INCOMPATIBILITY (Material to Avoid) (dust and fume) acetylene, chlorine						
HAZARDOUS DECOMPOSITION PRODUCTS copper fume, tin fume						

SECTION X - PHYSICAL DATA

MELTING POINT	1620°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H ₂ O = 1)	*	pH	N/A	VAPOR DENSITY (Air = 1)	N/A
*DENSITY	.318 lbs/in ³				

INFORMATION FURNISHED BY: Environmental Hygiene and Toxicology Department
(203) 789-5436

DATE March 18, 1986

Department of Environmental Hygiene and Toxicology
(203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

7664

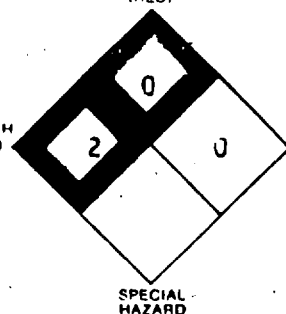
38 2

NFPA Designation 704

FLAMMABILITY
(RED)

HEALTH
(BLUE)

REACTIVITY
(YELLOW)



DEGREE OF HAZARD

- 4 - EXTREME
- 3 - HIGH
- 2 - MODERATE
- 1 - SLIGHT
- 0 - INSIGNIFICANT

EMERGENCY TELEPHONES:

PLANTS: (419) 793-1231 NEWARK, GA
(913) 749-8100 LAWRENCE, KS
(201) 541-4171 CARTERET, NJ

CHEMTREC: (800) 424-9300 TRANSPORTATION
MEDICAL: (301) 305-9040 ROENTGEN

REVISION: 05

EFFECTIVE: 07/21/89

PRINTED: 09/25/89

PREPARED FOR USE BY.....

HAMPDEN COLOR & CHEMICAL CO
126 MEMORIAL DRIVE
SPRINGFIELD MA 01101

IDENTIFICATION

9/89

INFORMATION PROVIDED BY...

FMC CORPORATION
2000 MARKET STREET
PHILADELPHIA PA 19103

PRODUCT INFORMATION

SYNONYMS.....
SHIPPING NAME - DOT.....
IATA.....
IMCO.....
FORMULA.....
CHEMICAL FAMILY.....
PRODUCT USES.....

ORTHOPHOSPHORIC ACID, MONOPHOSPHORIC ACID
PHOSPHORIC ACID
PHOSPHORIC ACID
PHOSPHORIC ACID
H3PO4
PHOSPHATE
PHOSPHATES AND FERTILIZERS, ACID CLEANERS,
ALUMINUM BRIGHTENERS AND METAL PHOSPHATIZING
LEATHER TANNING, VARNISH, SYNTHETIC RUBBER,
BOILER WATER TREATMENT, ACIDULANT FOR COLA
DRINKS, YEAST NUTRIENT, ETC.

PRECAUTIONARY INFORMATION

PRECAUTIONARY STATEMENT...
(PLEASE USE THIS STATEMENT
TO SATISFY THE IN-PLANT
LABELING REQUIREMENTS
OF THE OSHA HAZARD
COMMUNICATIONS STANDARD
29CFR 1910.1200)

HEALTH:
LIQUID IS CORROSIVE TO EYES AND SKIN. MIST
PRODUCES IRRITATION TO EYES, NOSE, THROAT AND
LUNGS.

PHYSICAL: NO SIGNIFICANT HAZARD.

FIRST AID:
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES
WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.
CALL A PHYSICIAN. FLUSH SKIN WITH WATER.

MATERIAL SAFETY DATA

7664

38 2

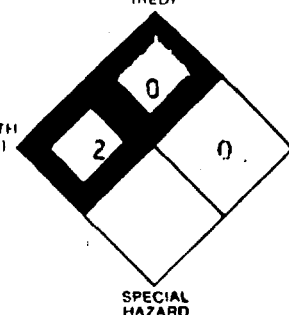
NFPA Designation 704

PHOSPHORIC ACID (70-85%)

FLAMMABILITY
(RED)

DEGREE OF HAZARD

4 - EXTREME
3 - HIGH
2 - MODERATE
1 - SLIGHT
0 - INSIGNIFICANT

HEALTH
(BLUE)REACTIVITY
(YELLOW)

EMERGENCY TELEPHONES:

PLANTS: (415) 793-1231 NEWARK, CA
(913) 749-8100 LAWRENCE, KS.

(201) 541-4171 CARTERET, NJ

CHEMTREC: (800) 424-9300 TRANSPORTATION

MEDICAL: (303) 595-9048 ROCKY MTN

REVISION: 05

EFFECTIVE: 07/21/89

PRINTED: 09/25/89

===== INGREDIENTS =====

CAS# AND COMPONENT.....: MATERIAL OR COMPONENT: PHOSPHORIC ACID
PERCENT : 70-85
CAS# : 7664-38-2
MATERIAL OR COMPONENT: WATER
PERCENT : BALANCE

CANADIAN PRODUCT
IDENTIFICATION NUMBER.....: 1805

===== PHYSICAL DATA =====

MELTING/FREEZING POINT....: -17.5C FOR 75%, +21C FOR 85%
BOILING POINT.....: 130-158C
VAPOR PRESSURE.....: 8-2 MM HG @ 25°C (WATER)
VAPOR DENSITY (AIR = 1)....: NON-VOLATILE
ROOM TEMPERATURE
APPEARANCE AND STATE: CLEAR, COLORLESS LIQUID
ODOR.....: NONE
SPECIFIC GRAVITY (H2O =1): 1.5-1.7
SOLUBILITY IN H2O % BY WT: INFINITE
% VOLATILES BY VOLUME.....: NON-VOLATILE
EVAPORATION RATE
(BUTYL ACETATE = 1)....: NON-VOLATILE
PH (AS IS).....: ABOUT 1.5
PH (1% SOLUTION).....: 1.7
ODOR THRESHOLD.....: NOT APPLICABLE
DENSITY (GMS/ML).....: 1.3-1.7 DEPENDING ON CONCENTRATION
COEFF. WATER/OIL DIST.....: NOT AVAILABLE

===== FIRE, EXPLOSION AND REACTIVITY DATA =====

FLASH POINT.....: NON COMBUSTIBLE
AUTOIGNITION TEMPERATURE.: NON COMBUSTIBLE
FLAMMABLE LIMITS UPPER...: NOT APPLICABLE
(AIR) LOWER...: NOT APPLICABLE
EXTINGUISHING MEDIA.....: NOT APPLICABLE
SPECIAL FIREFIGHTING.....: USE FULL PROTECTIVE CLOTHING AND SELF-CONTAINED
PROCEDURES BREATHING APPARATUS. THERMAL DECOMPOSITION
EMITS TOXIC FUMES OF OXIDES OF PHOSPHORUS.

PAGE 02

MATERIAL SAFETY DATA

7664

38 2

NFPA Designation 704

PHOSPHORIC ACID (70-85%)

DEGREE OF HAZARD

4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT

HEALTH
(BLUE)

FLAMMABILITY
(RED)

REACTIVITY
(YELLOW)

SPECIAL
HAZARD

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===== FIRE, EXPLOSION AND REACTIVITY DATA =====

DEGREE OF FIRE AND: NONE
EXPLOSION HAZARD

STABILITY.....: STABLE

HAZARDOUS POLYMERIZATION.: WILL NOT OCCUR

CONDITIONS TO AVOID.....: CONTACT WITH ALKALINE MATERIALS, REACTIVE METALS

MAJOR CONTAMINANTS THAT.: NONE

CONTRIBUTE TO INSTABILITY

INCOMPATIBILITY.....: CONTACT WITH REACTIVE METALS (E.G. MILD STEEL
AND ALUMINUM) MAY PRODUCE FLAMMABLE/EXPLOSIVE
HYDROGEN - AIR MIXTURES. REACTS VIOLENTLY WITH
STRONG BASES.

HAZARDOUS DECOMPOSITION.: AT FLAME TEMPERATURES, WILL EMIT TOXIC
PRODUCTS PHOSPHORUS OXIDE FUMES.

SENSITIVITY TO MECH.....: NONE
IMPACT

SENSITIVITY TO STATIC....: NONE
DISCHARGE

===== ROUTES OF EXPOSURE =====

EYE CONTACT.....: SEVERE IRRITANT; CHEMICAL BURN LIKELY.
SOURCE: RTECS
DATE: 1980

SKIN CONTACT.....: NON-IRRITATING (RABBIT)

SKIN ABSORPTION.....: REFERENCE: FMC STUDY 188-1050

SLIGHTLY HAZARDOUS LD50 (RABBIT) = 2740 MG/KG

SOURCE: RTECS

DATE: 1980

INHALATION.....: SEVERE IRRITANT - TCED (HUMAN): 100 MILLIGRAMS
PER CUBIC METER. SOURCE: RTECS DATE: 1980

INGESTION.....: SLIGHTLY HAZARDOUS. LD50 (RAT) = 1530 MG/KG
SOURCE: RTECS

DATE: 1980

MATERIAL SAFETY DATA

7664

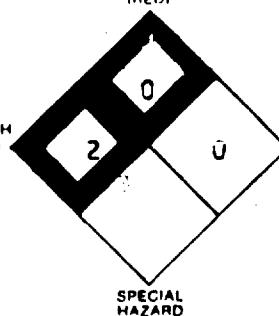
38 2

NFPA Designation 704

PHOSPHORIC ACID (70-85%)

DEGREE OF HAZARD

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1 - SLIGHT
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HEALTH
(BLUE)FLAMMABILITY
(RED)REACTIVITY
(YELLOW)SPECIAL
HAZARD

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===== EXPOSURE LIMITS =====

TLV = 1 MG/CU.M
SOURCE: ACGIH DATE: 1984-85
PEL = 1 MG/CU. M
SOURCE: OSHA DATE: 1974
STEL = 3 MG/CU.M
SOURCE: OSHA DATE: 1989

===== EFFECTS OF OVEREXPOSURE =====

ACUTE EXPOSURE.....: IRRITANT, SLIGHTLY TOXIC WHEN INHALED OR
INGESTED.
CHRONIC EXPOSURE.....: SLIGHTLY TOXIC WITH REPEATED INHALATION OR
(EFFECTS CONSIDERED INGESTION. CAUSES BURNS TO EXPOSED TISSUE.
INCLUDE: SENSITIVITIES,
CARCINOGENICITY,
TERATOGENICITY,
MUTAGENICITY,
SYNERGISTIC
PRODUCTS, AND
ANY MEDICAL CONDITIONS
GENERALLY RECOGNIZED AS
BEING AGGRAVATED BY
EXPOSURE.)

===== EMERGENCY AND FIRST AID PROCEDURES =====

EYES.....: FLUSH WITH COPIOUS WATER FOR AT LEAST 15
MINUTES. IF IRRITATION PERSISTS, OBTAIN MEDICAL
ATTENTION.
SKIN.....: WASH OFF WITH WATER. IF IRRITATION PERSISTS,
OBTAIN MEDICAL ATTENTION.
INHALATION.....: REMOVE FROM EXPOSURE. IF BREATHING IS DIFFICULT
OR DISCOMFORT PERSISTS, OBTAIN MEDICAL
ATTENTION.
INGESTION.....: RINSE MOUTH WITH WATER; GIVE COPIOUS WATER TO
CAUSE DILUTION IN STOMACH. DO NOT CAUSE
VOMITING.
DECONTAMINATION PROCEDURE: WASH WITH COPIOUS WATER.

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MATERIAL SAFETY DATA

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PHOSPHORIC ACID (70-85%)

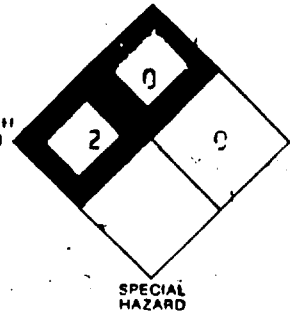
FLAMMABILITY (RED)

HEALTH (BLUE)

REACTIVITY (YELLOW)

DEGREE OF HAZARD

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- 3 - HIGH
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EMERGENCY AND FIRST AID PROCEDURES

NOTES TO PHYSICIAN: MODERATELY CORROSIVE AGENT WHICH MAY BURN ANY EXPOSED TISSUES UPON OTHER THAN VERY BRIEF CONTACT. EYES, SKIN AND MUCOUS MEMBRANES SHOULD BE FLUSHED THOROUGHLY WITH WATER, AND OPHTHALMOLOGIC CONSULTATION SHOULD BE OBTAINED FOR ANY CORNEAL BURNS. IN CASES OF INGESTION, IMMEDIATE DILUTION WITH WATER, MILK OR DEMULCENTS IS WORTHWHILE, BUT ATTEMPTS TO NEUTRALIZE WITH A BASE SHOULD BE AVOIDED BECAUSE OF EXCESSIVE GAS AND HEAT FORMATION, WHICH MAY INCREASE THE THREAT OF ESOPHAGOGASTRIC PERFORATION. VOMITING AND DIARRHEA (LAXATIVE EFFECT OF PHOSPHATES) ARE EXPECTED WITH LARGE DOSES. PARENTERAL FLUID ADMINISTRATION MAY BE NEEDED IF LOSSES THEREFROM ARE SEVERE, OR IF SHOCK PERSISTS. SUPPORTIVE CARE MAY BE NEEDED FOR SUCH OTHER COMPLICATIONS AS GLOTTAL EDEMA, HEMATEMESIS AND PERFORATION (UNLIKELY). INDUCED VOMITING SHOULD BE AVOIDED BECAUSE LOCAL TISSUE INJURY MAY BE AGGRAVATED, BUT THE PATIENT SHOULD BE WATCHED FOR HYPERPHOSPHATEMIA AND HYPOCALCEMIA. MILK OR OTHER DEMULCENTS MAY BE WORTHWHILE FOR GASTRIC IRRITATION.

SPECIAL PROTECTION

VENTILATION REQUIREMENTS: VENTILATION ONLY REQUIRED IN CASE OF MIST CONDITIONS.
RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT: PROTECT EYES AND SKIN FROM CONTACT.

RESPIRATORY PROTECTIVE EQUIPMENT: FOR SEVERE MIST USE NIOSH/MSHA "ACID GAS" RESPIRATOR WITH FULL FACE PIECE OR IN SEVERE EXPOSURE USE SELF-CONTAINED BREATHING APPARATUS.

MATERIAL SAFETY DATA

7664

38 2

NFPA Designation 704

PHOSPHORIC ACID (70-85X)

FLAMMABILITY
(RED)HEALTH
(BLUE)REACTIVITY
(YELLOW)SPECIAL
HAZARD

DEGREE OF HAZARD

4 - EXTREME
3 - HIGH
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1 - SLIGHT
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SPECIAL PROTECTION

EYES.....: WEAR CHEMICAL GOGGLES, IF SPLASHING, SPRAY OR MIST CONDITIONS ARE POSSIBLE.
GLOVES.....: RUBBER, NEOPRENE OR OTHER RESISTANT ELASTOMER
SPECIAL CLOTHING...: WHERE CONTACT IS LIKELY, RUBBER APRON AND BOOTS.
AND EQUIPMENT
FOOTWEAR.....: USE RUBBER BOOTS IN SPILL SITUATIONS.

STORAGE AND HANDLING

(PLEASE USE THIS STATEMENT
TO SATISFY THE IN-PLANT
LABELING REQUIREMENTS
OF THE OSHA HAZARD
COMMUNICATIONS STANDARD
29CFR 1910.1200)

USE GOGGLES AND/OR FACE SHIELDS, RUBBER APRONS, GLOVES AND BOOTS WHERE SPLASHING OR LIQUID CONTACT IS EXPECTED. FOR EXPOSURE TO AIRBORNE MIST USE NIOSH/MSHA ACID GAS RESPIRATOR WITH FULL FACEPIECE.
WHEN UNLOADING BULK VEHICLES, PERSONNEL SHOULD WEAR CHEMICAL GOGGLES AND RUBBER OR NEOPRENE GLOVES. ALL FITTINGS SHOULD BE PROPERLY SECURED PRIOR TO ENERGIZING UNLOADING SYSTEM. CARE SHOULD BE TAKEN TO AVOID ACID CONTACT WHEN DISCONNECTING LINES/HOSES AFTER UNLOADING. FOR BULK STORAGE TYPE 316L STAINLESS STEEL IS RECOMMENDED. GLASS, POLYETHYLENE, AND FRP (DEPENDENT ON RESIN USED) ARE ALSO SATISFACTORY. STEEL, ALUMINUM AND TYPE 304 STAINLESS ARE NOT RECOMMENDED BECAUSE OF RAPID OR POTENTIAL CORROSION. VESSELS SHOULD BE VENTED AND OPERATED AT AMBIENT CONDITIONS. MAINTENANCE HEAT (HOT WATER PREFERRED) MAY BE USED TO PREVENT FREEZING. RECOMMEND DIKED AREA AROUND STORAGE TANK WITH SUFFICIENT VOLUME TO HOLD ENTIRE TANK CONTENTS.

DISPOSAL, SPILL OR LEAK PROCEDURES

PROCEDURE FOR RELEASE.....
OR SPILL
WASTE DISPOSAL METHOD.....

DIKE AND SALVAGE OR NEUTRALIZE. SODA ASH AND LIME ARE NEUTRALIZING AGENTS. IF MATERIAL CAN NOT BE SALVAGED, A METHOD IS NEUTRALIZATION FOLLOWED BY DISCHARGE INTO A TREATMENT SYSTEM IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

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MATERIAL SAFETY DATA

7664

38 2

NFPA Designation 704

PHOSPHORIC ACID (70-85%)

DEGREE OF HAZARD

4 - EXTREME
3 - HIGH
2 - MODERATE
1 - SLIGHT
0 - INSIGNIFICANT

HEALTH
(BLUE)

FLAMMABILITY
(RED)

REACTIVITY
(YELLOW)

SPECIAL
HAZARD

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TRANSPORTATION DATA

DOT PROPER SHIPPING NAME.: PHOSPHORIC ACID
DOT CLASSIFICATION.....: CORROSIVE MATERIAL
DOT LABELS.....: CORROSIVE
DOT MARKING.....: PHOSPHORIC ACID UN 1805
DOT PLACARD.....: CORROSIVE
UN NUMBER.....: UN 1805
HAZARDOUS SUBSTANCE/RQ...: 5000 LBS. (2270 KG)
49 STCC NUMBER.....: 4930248
EMERGENCY ACCIDENT
PRECAUTIONS AND PROCEDURE: FLUSH WITH LARGE AMOUNTS OF WATER
RECAUTIONS TO BE TAKEN...: PROTECT AGAINST PHYSICAL DAMAGE
IN TRANSPORTATION
TYPE PACKAGES.....: BULK ACID TRUCKS OR RAILCARS; DRUMS
OTHER SHIPPING IDS.....: NONE

ADDITIONAL REGULATORY INFORMATION

MATERIAL IS REPORTED IN
EPA TSCA INVENTORY LIST? YES
MATERIAL IS LISTED AS A
CARCINOGEN/POTENTIAL
CARCINOGEN IN FOLLOWING
NTP ANNUAL REPORT...? NO
IARC GROUP I OR II...? NO
OSHA 29CFR PART 1910
SUBPART Z ? NO
ACGIH APPENDIX A.....? NO
FDA GRAS LIST; PERMITTED IN FOOD.
USDA PERMITTED IN MEATS.
CONTAINS UP TO 100 PPM ARSENIC, 2 PPM CADMIUM
AND 7 PPM LEAD FROM CALIFORNIA'S "PROPOSITION
65" LISTS OF CARCINOGENS AND REPRODUCTIVE
TOXINS.
DOES PRODUCT CONTAIN A
TOXIC CHEMICAL(S) SUBJECT
TO SARA TITLE III SECTION
13 REPORTING..... YES
CHEMICAL(S).....: PHOSPHORIC ACID (THIS PRODUCT)

MATERIAL SAFETY DATA

7664

38 2

NFPA Designation 704

PHOSPHORIC ACID (70-85%)

FLAMMABILITY
(RED)

DEGREE OF HAZARD

4 EXTREME
3 HIGH
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HEALTH
(BLUE)

REACTIVITY
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SPECIAL
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***** ADDITIONAL REGULATORY INFORMATION *****

SARA TITLE III SECTION

311/312 CLASSIFICATION....:

MSDS REQUIRED; INVENTORY REPORTING REQUIRED.

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

REAGENT : ~~PHOSVER-3 POWDER PILLOWS~~ CODE 2304 (PAGE 1 OF 3)
MASS. REG.# EFFECTIVE DATE 02-16-91
REVISIONS TO SECTIONS: -;EDIT:APPENDIX
PRINTED: 01-31-92

REAGENT APPLICATION : FIELD TEST REAGENT

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC REAGENT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

DISULFURIC ACID,DIPOTASSIUM SALT***(POTASSIUM HYDROGEN SULFATE,FUSED);
CAS#7790-62-7;CORROSIVE;PEL:NONE;TLV:NONE.

SODIUM MOLYBDATE***(MOLYBDIC ACID,DISODIUM SALT)***CAS#7631-95-0;POSSIBLE
RESPIRATORY IRRITANT;PEL:5MG/M3(AS MO);TLV:5MG/M3(AS MO). (2.0-5.0%)

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% SOL.	(APPROX.) 1.5	ODOR: NONE
FL.PT.(DEG.F): NA		SP.GR.(70F)OR DENSITY: 2.17
VAPOR PRESSURE(mmHG): NA		VAPOR DENSITY(AIR=1): NA
VISC cps70F: NA		%SOLUBILITY(WATER): 100
EVAP.RATE: NA WATER=1		APPEARANCE: WHITE
PHYSICAL STATE: POWDER		FREEZE POINT(DEG.F): NA

-----SECTION 3-----REACTIVITY DATA-----

STABLE. BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

REAGENT: PHOSVER 3 POWDER PILLOWS

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING. MAY BE CORROSIVE IN CONTACT WITH MOIST SKIN.

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

DUSTS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED CONTACT MAY CAUSE TISSUE NECROSIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION OF DUSTS MAY CAUSE IRRITATION AND/OR BURNS TO RESPIRATORY TRACT;
SKIN CONTACT CAN CAUSE MODERATE IRRITATION TO BURNS(DEPENDENT ON LENGTH OF
EXPOSURE).

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER
FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID
TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION***

GENERAL-DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
SPECIFIC- DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

GENERAL-VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. SWEEP
UP AND PLACE IN WASTE DISPOSAL CONTAINER.

SPECIFIC- SPILL RESIDUE MAY BE NEUTRALIZED WITH SODA ASH

DISPOSAL INSTRUCTIONS***

GENERAL-WATER CONTAMINATED WITH THIS REAGENT MAY BE SENT TO A SANITARY
SEWER, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A TREATMENT FACILITY OR
DISCHARGED UNDER A NPDES PERMIT

REAGENT(AS IS)- INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS(FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

REAGENT: PHOSVER 3 POWDER PILLOWS

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT REAGENT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE RUBBER GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

AIRTIGHT CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP CONTAINER CLOSED WHEN NOT IN USE.

KEEP DRY

HANDLING INSTRUCTIONS***

CORROSIVE TO MOIST SKIN. CORROSIVE TO EYES.

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN# /ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

NFPA/HMIS : HEALTH - 3 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - C

Man-GILL CHEMICAL COMPANY

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MATERIAL SAFETY DATA SHEET

Section I				07858
Identity PHTHALO BLUE		Date Prepared 02/25/86	Date Revised 12/09/85	
NFPA CODE: HEALTH: 2		FLAMMABILITY: 1		REACTIVITY: 1
Section II — Hazardous Ingredients				
Hazardous Ingredients	CAS #	Health Hazards	ACGIH TLV - TWA	
PROPYLENE GLYCOL	107-98-2		360 MG/CUM	
NO COMPONENT WAS FOUND TO BE CARCINOGENIC IN NTP, IARC OR OSHA 1910(Z)				
Section III — Physical/Chemical Characteristics				
Boiling Point 369 DEG F		Specific Gravity (H ₂ O = 1) 0.98		
Vapor Pressure (mm Hg) NOT DETERMINED		Percent Volatile By Volume (%) 75.0		
Vapor Density (AIR = Reference) HEAVIER		Evaporation Rate (Ether = Reference) SLOWER		
Water Soluble NO				
Appearance and Odor BLUE LIQUID, MILD ODOR				
Section IV — Fire and Explosion Hazard Data				
Flash Point (Method Used) 214 DEG F TCC		Flammable Limits LOWEST VALVE	LEL 2.6	UEL
Extinguishing Media CARBON DIOXIDE. DRY CHEMICAL.				
Special Fire Fighting Procedures CONTAINER.		IF EXPOSED TO HEAT, PRESSURE WILL BUILD UP IN		
Unusual Fire and Explosion Hazards		A STRAIGHT WATER STREAM WOULD SPREAD FIRES. STATIC ELECTRICITY COULD CAUSE IGNITION.		

Man-GILL CHEMICAL COMPANY

MATERIAL SAFETY DATA SHEET

PHTHALO BLUE

07858

Section V — Reactivity Data

STABILITY	Unstable Stable *	Conditions to Avoid AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES
INCOMPATIBILITY (Materials to Avoid) NONE KNOWN		
Hazardous Decomposition Products CO, CO ₂		
HAZARDOUS POLYMERIZATION	May Occur Will Not Occur *	Conditions to Avoid NONE

Section VI — Health Hazard Data

Effects of Overexposure	MILD SKIN IRRITANT. HARMFUL IF SWALLOWED. IRRITATING TO THE EYES. INHALATION MAY CAUSE HEADACHE, NAUSEA, AND DIZZINESS.
Emergency and First Aid Procedures	
Eye (Contact):	FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY.
Skin (Contact):	WASH WITH SOAP AND WATER. CONTACT PHYSICIAN IF IRRITATION PERSISTS.
Ingestion (Swallowing):	DRINK LARGE QUANTITIES OF MILK OR WATER. CONSULT PHYSICIAN IMMEDIATELY.
Inhalation (Breathing):	REMOVE TO FRESH AIR.

Section VII — Precautions for Safe Handling & Use

Steps to be taken in Case Material is Released or Spilled CONTAIN SPILL. ABSORB AND DISPOSE WASTE.	
Waste Disposal Method:	DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions To be Taken in Handling and Storage DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.	
Other Precautions:	SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED.

Section VIII — Control Measures

Respiratory Protection (Specify Type) USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED.	
Ventilation	Local Mechanical RECOMMENDED TO MAINTAIN BELOW TLV
Protective Gloves NEOPRENE RUBBER	Eye Protection SPLASH GOGGLES OR FACE SHIELD
Other Protective Clothing or Equipment PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT.	
Work/Hygienic Practices WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.	

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF SELLER'S KNOWLEDGE, HOWEVER, SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED, IMPLIED OR OF MERCHANTABILITY REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO BUYER OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND BUYER ASSUMES ALL SUCH RISK.

Man-GILL CHEMICAL COMPANY

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MATERIAL SAFETY DATA SHEET

Section I			
Identity PHTHALO GREEN	Date Prepared 02/21/86	Date Revised 12/09/85	
	NEPA CODE HEALTH: 2	FLAMMABILITY: 1	REACTIVITY: 1
Section II — Hazardous Ingredients			
Hazardous Ingredients	CAS #	Health Hazards	ACGIH TLV - TWA
PROPYLENE GLYCOL	107-98-2		360 MG/CUM
NO COMPONENT WAS FOUND TO BE CARCINOGENIC IN NTP, IARC OR OSHA 1910(Z)			
Section III — Physical/Chemical Characteristics			
Boiling Point 369 DEG F	Specific Gravity (H ₂ O = 1) 1.06		
Vapor Pressure (mm Hg) NOT DETERMINED	Percent Volatile By Volume (%) 71		
Vapor Density (AIR = Reference) HEAVIER	Evaporation Rate (Ether = Reference) SLOWER		
Water Soluble NO			
Appearance and Odor GREEN LIQUID, MILD ODOR			
Section IV — Fire and Explosion Hazard Data			
Flash Point (Method Used) 214 DEG F TCC	Flammable Limits LOWEST VALUE	LEL 2.6	UEL
Extinguishing Media CARBON DIOXIDE. DRY CHEMICAL.			
Special Fire Fighting Procedures CONTAINER.	IF EXPOSED TO HEAT, PRESSURE WILL BUILD UP IN		
Unusual Fire and Explosion Hazards FIRES. STATIC ELECTRICITY COULD CAUSE IGNITION.	A STRAIGHT WATER STREAM WOULD SPREAD		

TRW-01893

Man-GILL CHEMICAL COMPANY

MATERIAL SAFETY DATA SHEET

PHTHALO GREEN

07859

Section V — Reactivity Data

STABILITY	Unstable Stable *	Conditions to Avoid AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES.
INCOMPATIBILITY (Materials to Avoid) NONE KNOWN		
Hazardous Decomposition Products OXIDES OF CARBON		
HAZARDOUS POLYMERIZATION	May Occur Will Not Occur *	Conditions to Avoid NONE

Section VI — Health Hazard Data

Effects of Overexposure	MILD SKIN IRRITANT. HARMFUL IF SWALLOWED. IRRITATING TO THE EYES. INHALATION MAY CAUSE HEADACHE, NAUSEA, AND DIZZINESS.
Emergency and First Aid Procedures	
Eye (Contact):	FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY.
Skin (Contact):	WASH WITH SOAP AND WATER. CONTACT PHYSICIAN IF IRRITATION PERSISTS.
Ingestion (Swallowing):	DRINK LARGE QUANTITIES OF MILK OR WATER. CONSULT PHYSICIAN IMMEDIATELY.
Inhalation (Breathing):	REMOVE TO FRESH AIR.

Section VII — Precautions for Safe Handling & Use

Steps to be taken in Case Material is Released or Spilled CONTAIN SPILL. ABSORB AND DISPOSE WASTE.	
Waste Disposal Method:	DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions To be Taken in Handling and Storage DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.	
Other Precautions:	SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED.

Section VIII — Control Measures

Respiratory Protection (Specify Type) USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED.	
Ventilation	Local Mechanical RECOMMENDED TO MAINTAIN BELOW TLV
Protective Gloves NEOPRENE RUBBER	Eye Protection SPLASH GOGGLES OR FACE SHIELD
Other Protective Clothing or Equipment PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT.	
Work/Hygienic Practices WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.	
THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF SELLER'S KNOWLEDGE, HOWEVER, SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED, IMPLIED OR OF MERCHANTABILITY REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO BUYER OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND BUYER ASSUMES ALL SUCH RISK.	



RUTLAND PRODUCT INFORMATION

Codes 60, 61, 62 - PIPE JOINT CEMENT

General: For joining threaded pipe of iron, steel or brass. Lubricates threads, provides a tight seal, long lasting. Remains soft in use, so pipes can be disjointed easily, if the need occurs. Used in systems carrying hot or cold water, low or high pressure steam.

Packaging: Code 60 - 12- $\frac{1}{2}$ pint BRUSH TOP cans per case
 Code 61 - 12-1 pint cans per case
 Code 62 - 12-1 quart cans per case

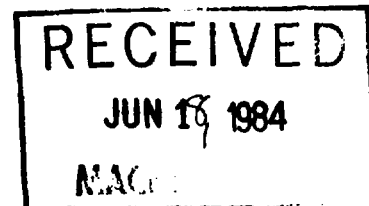
NOTE: We have confirmed the suitability of this product for the uses described above only, when applied according to the directions on the label. We do not assume responsibility for results obtained from other uses or failure to follow the directions.

Technical:

Composition	Boiled linseed oil/Inert filler
Color	Gray
Lead content	None
% Non-Volatile	99 + %

Dec. '79

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Material Safety Data Sheet

Devcon

DEVCON CORPORATION/30 ENDICOTT STREET/DANVERS, MASSACHUSETTS 01923/(617) 777-1100

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made to the information contained herein.

H	HEALTH	<input type="text" value="1"/>
F	FLAMMABILITY	<input type="text" value="1"/>
R	REACTIVITY	<input type="text" value="0"/>

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

SECTION 1 - IDENTITY AND EMERGENCY INFORMATION

TRADE NAME

PLASTIC STEEL LIQUID (B) - RESIN

EMERGENCY

TELEPHONE NO. (617) 777-1100

CHEMICAL FAMILY

Filled Epoxy Resin

OTHER INFORMATION CALLS:

DEVCON SAFETY DEPT (617) 777-1100

OTHER PRODUCT INFORMATION: The following health hazard data pertain to the resin only. When mixed with the hardener, uncured material should be handled in accordance with the precautions recommended on the hardener Material Safety Data Sheet.

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	%	NATURE OF HAZARD
Bisphenol A Diglycidyl Ether Resin	25068-38-6	30-60	Moderate skin sensitizer

SECTION 3 - PHYSICAL DATA

BOILING POINT (F)	n.a.	VAPOR DENSITY (AIR = 1)	>1	EVAPORATION RATE (BuAc = 1)	n.a.
MELTING POINT (F)	n.a.	SPECIFIC GRAVITY	2.8	SOLUBILITY IN WATER	Nil
VAPOR PRESSURE (mm Hg.) @ 78°F	Nil	PERCENT VOLATILE BY VOLUME (%)	0	pH (5 wt. % in H ₂ O)	7.0
APPEARANCE AND ODOR					
Dark gray paste, low odor.					

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (F.) (Method Used)	>400°F (PMCC)	FLAMMABLE LIMITS IN AIR	LEL	UEL
			n.a.	n.a.
EXTINGUISHING MEDIA	CO ₂ or dry chemicals. Polymer foams for large fires.			
SPECIAL FIRE FIGHTING PROCEDURES	Firefighters should wear self-contained breathing apparatus and protective clothing.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION 5 - HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES	
EYES:	Flush with water for 15 minutes. Get medical attention.
SKIN:	Wash with soap and warm water. Get medical attention if irritation develops.
INGESTION:	Do not induce vomiting. Administer two glasses of water. Get medical advice.
INHALATION:	Remove to fresh air. Administer oxygen if breathing is difficult. Get medical attention.

SECTION 5 - HEALTH HAZARD DATA (Continued)

THRESHOLD LIMIT VALUE	ORAL LD ₅₀ (RAT): Epoxy Resin 11.4g/kg	DERMAL LD ₅₀ (RABBIT): Epoxy Resin >20g/kg	INHALATION LC ₅₀ (RAT) Epoxy Resin No deaths in sat'd air for 8 hrs
ROUTE OF EXPOSURE	EFFECTS OF OVEREXPOSURE		
ACUTE: EYES: Mild irritation SKIN: Mild irritation INHALATION: No data CHRONIC: Moderate skin sensitizer			
CARCINOGENICITY	NTP? No	ACGIH? No	IARC MONOGRAPHS? No
OSHA REGULATED? No			
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE Allergy, eczema, skin condition			

SECTION 6 - REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID Open flame and excessive heat.
	STABLE X	
INCOMPATIBILITY (Materials to Avoid) Strong oxidizing agents and strong acids		
HAZARDOUS DECOMPOSITION PRODUCTS Oxides of carbon, aldehydes and acids from incomplete combustion.		
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID Heat is generated when mixed with epoxy hardener. Use caution when mixing large quantities.
	WILL NOT OCCUR X	

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Prevent skin and eye contact. Scrape up and discard in suitable containers. Use absorbent material if necessary. Wash spill area with an industrial cleaning agent. If a solvent is used for cleaning, take precautions against fire and personal overexposure.
WASTE DISPOSAL METHOD	Remove to a waste disposal facility operating in compliance with state and local regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION

EYES	Safety glasses with side shields.
SKIN:	Chemical resistant rubber gloves and other protective clothing as required to prevent skin contact.
INHALATION:	None required at normal handling temperatures.
VENTILATION:	Local exhaust is recommended for confined areas. General ventilation is adequate for normal use.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING, STORING, ETC.
Store in a cool, dry place. Handle in accordance with the potential hazard of the curing agent used. Remove contaminated clothing and protective gear. Launder or clean before re-use. Destroy leather articles, including shoes that cannot be decontaminated. Wash thoroughly after using, particularly before eating or smoking. If cured material is sanded or machined, use proper precautions. Wear adequate protective equipment to prevent overexposure to nuisance particulates.

D.O.T. PROPER SHIPPING NAME Non-regulated
D.O.T. HAZARD CLASS (IF APPLICABLE) _____

REVISED
DATE: JULY 1986

Material Safety Data Sheet

Devcon

DEVCON CORPORATION/30 ENDICOTT STREET/DANVERS, MASSACHUSETTS 01923/(617) 777-1100

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H HEALTH	1
F FLAMMABILITY	1
R REACTIVITY	0

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

SECTION 1 - IDENTITY AND EMERGENCY INFORMATION

TRADE NAME

PLASTIC STEEL PUTTY (A) - RESIN

EMERGENCY

TELEPHONE NO. (617) 777-1100

CHEMICAL FAMILY

Filled Epoxy Resin

OTHER INFORMATION CALLS:

DEVCON SAFETY DEPT (617) 777-1100

OTHER PRODUCT INFORMATION The following health hazard data pertain to the resin only. When mixed with the hardener, uncured material should be handled in accordance with the precautions recommended on the hardener Material Safety Data Sheet.

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	%	NATURE OF HAZARD
Bisphenol A Diglycidyl Ether Resin	25068-38-6	10-30	Moderate skin sensitizer

SECTION 3 - PHYSICAL DATA

BOILING POINT (F)	n.a.	VAPOR DENSITY (AIR = 1)	>1	EVAPORATION RATE (BuAc = 1)	n.a.
MELTING POINT (F)	n.a.	SPECIFIC GRAVITY	2.8	SOLUBILITY IN WATER	Nil
VAPOR PRESSURE (mm Hg) @ 78°F	Nil	PERCENT VOLATILE BY VOLUME (%)	0	pH (5 wt. % in H ₂ O)	7.0
APPEARANCE AND ODOR					
Dark gray paste; low odor.					

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (F) (Method Used)	>400°F (PMCC)	FLAMMABLE LIMITS IN AIR	LEL	UEL
			n.a.	n.a.
EXTINGUISHING MEDIA CO ₂ or dry chemicals. Polymer foams for large fires.				
SPECIAL FIRE FIGHTING PROCEDURES				
Firefighters should wear self-contained breathing apparatus and protective clothing.				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION 5 - HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES	
EYES	Flush with water for 15 minutes. Get medical attention.
SKIN	Wash with soap and warm water. Get medical attention if irritation develops.
INGESTION	Do not induce vomiting. Administer two glasses of water. Get medical advice.
INHALATION	Remove to fresh air. Administer oxygen if breathing is difficult. Get medical attention.

SECTION 5 - HEALTH HAZARD DATA (Continued)

THRESHOLD LIMIT VALUE	ORAL LD ₅₀ (RAT): Epoxy resin 11.4g/kg	DERMAL LD ₅₀ (RABBIT): Epoxy resin >20g/kg	INHALATION LC ₅₀ (RAT) Epoxy resin No deaths in sat'd air for 8 hours.
Not established			
ROUTE OF EXPOSURE	EFFECTS OF OVEREXPOSURE		
ACUTE:			
EYES	Mild irritation		
SKIN	Mild irritation		
INHALATION:	No data		
CHRONIC:	Possible sensitization from prolonged or repeated skin contact.		
CARCINOGENICITY	NTP? No	ACGIH? No	IARC MONOGRAPHS? No
			OSHA REGULATED? No
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE	None reported		

SECTION 6 - REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	X Open flame and excessive heat.
INCOMPATIBILITY (Materials to Avoid)	Strong oxidizing agents and strong acids	
HAZARDOUS DECOMPOSITION PRODUCTS	Oxides of carbon, aldehydes and acids from incomplete combustion.	
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X Heat is generated when mixed with epoxy hardener. Use caution when mixing large quantities.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Prevent skin and eye contact. Scrape up and discard in suitable containers. Use absorbent material if necessary. Wash spill area with an industrial cleaning agent. If a solvent is used for cleaning take precautions against fire and personal overexposure.

WASTE DISPOSAL METHOD

Remove to a waste disposal facility operating in compliance with state and local regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION

EYES:	Safety glasses with side shields
SKIN:	Chemical resistant rubber gloves and other protective clothing as required to prevent skin contact.
INHALATION:	None required at normal handling temperatures.
VENTILATION:	Local exhaust is recommended for confined areas. General ventilation is adequate for normal use.

SECTION 9 - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING, STORING, ETC.

Store in a cool, dry place.
Handle in accordance with the potential hazard of the curing agent used.
Remove contaminated clothing and protective gear. Launder or clean before re-use.
Destroy leather articles, including shoes that cannot be decontaminated. Wash thoroughly after using, particularly before eating or smoking.
If cured material is sanded or machined, use proper precautions. Wear adequate protective equipment to prevent overexposure to nuisance particulates.

TRW-01899

D.O.T. PROPER SHIPPING NAME Non-regulated

REVISED

D.O.T. HAZARD CLASS (IF APPLICABLE) _____

DATE: JULY 1986

0908-3277

Material Safety Data Sheet

Devcon

DEVCON CORPORATION/30 ENDICOTT STREET/DANVERS, MASSACHUSETTS 01923/(617) 777-1100

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made to the information contained herein.

H HEALTH	3
F FLAMMABILITY	1
R REACTIVITY	0

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

SECTION 1 - IDENTITY AND EMERGENCY INFORMATION

TRADE NAME

PUTTY HARDENER 0200

EMERGENCY

TELEPHONE NO. (617) 777-1100

CHEMICAL FAMILY

Polyamines and Modified Polyamines

OTHER INFORMATION CALLS:

DEVCON SAFETY DEPT (617) 777-1100

OTHER PRODUCT INFORMATION The following health hazard data pertain to the hardener only.
When fully cured, the mixed product is non-hazardous.

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	%	NATURE OF HAZARD
Triethylenetetramine (TETA)	112-24-3	30-60	Severe skin and eye irritant; respiratory irritant; skin sensitizer.
Polyamide Resin	12624-35-0	30-60	Severe eye irritant
Modified Aminoethyl Piperazine	70776-30-6	10-30	Skin and eye irritant

SECTION 3 - PHYSICAL DATA

BOILING POINT (F)	>450	VAPOR DENSITY (AIR = 1)	>1	EVAPORATION RATE (BuAc = 1)	<1
MELTING POINT (F)	n.a.	SPECIFIC GRAVITY	0.98	SOLUBILITY IN WATER	Appreciable
VAPOR PRESSURE (mm Hg.) @ 20°C	<0.01	PERCENT VOLATILE BY VOLUME (%)	0	pH (5 wt % in H ₂ O)	10-11
APPEARANCE AND ODOR Straw colored gel; mild ammonia like odor.					

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (F) (Method Used)	>200°F (TCC)	FLAMMABLE LIMITS IN AIR	LEL	UEL
			n.a.	n.a.
EXTINGUISHING MEDIA CO ₂ , dry chemical or water spray.				
SPECIAL FIRE FIGHTING PROCEDURES Firefighters should wear self-contained breathing apparatus and protective clothing.				
UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION 5 - HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES	
EYES:	Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative.
SKIN:	Immediately remove any contaminated clothing and wash thoroughly with soap and warm water.
INGESTION:	Corrosive. Do not induce vomiting. Give large amounts of water or milk and transport to a medical facility.
INHALATION:	Remove to fresh air. Contact a physician if symptoms persist.

SECTION 5 - HEALTH HAZARD DATA (Continued)

THRESHOLD LIMIT VALUE	ORAL LD ₅₀ (RAT):	DERMAL LD ₅₀ (RABBIT):	INHALATION LC ₅₀ (RAT)
Not established	TETA 2500mg/kg	TETA 820mg/kg	N/A
ROUTE OF EXPOSURE		EFFECTS OF OVEREXPOSURE	
ACUTE:			
EYES:	Severe irritation or burns.		
SKIN:	Severe irritation or burns, possible allergic response.		
INHALATION:	Respiratory irritation, possible allergic response.		
CHRONIC:	Possible sensitization from repeated skin contact.		
CARCINOGENICITY:	NTP?	ACGIH?	IARC MONOGRAPHS?
	No	No	No
OSHA REGULATED?			
No			
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE Asthma, bronchitis			

SECTION 6 - REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	X Exposure to open flame or excessive heat.
INCOMPATIBILITY (Materials to Avoid)		
Strong oxidizing agents, acids and chlorinated organic compounds.		
HAZARDOUS DECOMPOSITION PRODUCTS		
Oxides of nitrogen, carbon and ammonia.		
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X Heat is generated when mixed with epoxy resin. Use caution when mixing large quantities.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Prevent skin and eye contact. Remove contaminated clothing. Discard contaminated leather articles such as shoes and belts. Absorb spillage on inert material and discard in suitable containers.
WASTE DISPOSAL METHOD	Remove to a waste disposal facility operating in compliance with state and local regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION

EYES:	Safety glasses with side shields or splash proof goggles
SKIN:	Chemical resistant rubber gloves and other protective clothing as required to prevent skin contact.
INHALATION:	None needed in normal use with proper ventilation. In poorly ventilated areas use NIOSH approved organic vapor masks.
VENTILATION:	Local exhaust is recommended for prolonged or repeated use. Effective mechanical ventilation is adequate for occasional use.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING, STORING, ETC.
Prolonged or repeated overexposure may cause sensitization and allergic response. Persons so effected should consult a physician. If sensitization is confirmed, avoid further exposure to material. Keep hands away from eyes when handling material or before washing after use. Wash thoroughly after using, particularly before eating or smoking. Store in a cool, dry place.

D.O.T. PROPER SHIPPING NAME Corrosive Liquid, N.O.S.
D.O.T. HAZARD CLASS (IF APPLICABLE) Corrosive Material UN # 1760

REVISED
DATE: JULY 1986



705 North Mountain Road
Newington, Connecticut 06111
Telephone: (203) 278-1280
Telex: 99348

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Product Name PIPE SEALANT W/TEFLON
Product Type Anaerobic

Part No. 592

Formula No. _____

II. COMPOSITION

<u>Ingredients</u>	<u>% by Wt.</u>	<u>Hazard</u>
Polyglycol Dimethacrylates	10-15	See Section IV. ↓
Bis-Phenol A Fumarate Resin	25-30	
Mica	15-20	
Polyglycol Octoates	10-15	
1-Octanol	10-15	
Polytetrafluoroethylene****	5-10	
Titanium Dioxide**	2-3	
Silicon Dioxide***	2-3	
Cumene Hydroperoxide*	1-2	

*In a single test, pure cumene hydroperoxide caused tumors in one of thirty experimental animals when injected under the skin. **Pure titanium dioxide has been shown to cause tumors in experimental animals when injected into the muscles. ***Inhalation of pure silicon dioxide dust has been shown to cause pulmonary effects. ****Poly(tetrafluoroethylene) has been shown to cause tumors in experimental animals when implanted beneath the skin. In light of the low concentration of these components in the product, it is our best technical judgment that normal use of this product poses no such hazard. These warnings are present only to comply with OSHA regulations.

III. CHEMICAL AND PHYSICAL PROPERTIES

Vapor Pressure	<u>< 10 mm at 80°F</u>	Specific Gravity	<u>1.21 at 80°F</u>
Vapor Density	<u>Unknown</u>	Boiling Point	<u>> 300°F</u>
Solubility in Water	<u>Slight</u>	pH	<u>na</u>
Appearance	<u>White paste</u>	Odor	<u>Alcoholic</u>

IV. TOXICITY AND HEALTH HAZARD DATA

Toxicity
Est. Oral LD 50 >5000 mg/kg
Est. Dermal LD 50 >2000 mg/kg
Symptoms of Overexposure Intoxication, nausea, headache, dizziness. May cause dermatitis on prolonged contact in sensitive individuals.

TLV Unknown (1-Octanol)

Emergency Treatment Procedures

Ingestion: Do not induce vomiting. Keep individual calm. Obtain medical attention.
Inhalation: Remove individual to fresh air. If symptoms persist, obtain medical atten.
Skin Contact: Flush with water.
Eye Contact: Flush with water.

Personal Protection

Eyes: Safety glasses recommended.
Skin: Rubber or plastic gloves recommended.
Ventilation: Local ventilation recommended for prolonged use.

TRW-01902

PIPE SEALANT W/TEFLON

V. FLAMMABILITY AND EXPLOSIVE PROPERTIES

Flash point > 200°F Method TCC
Explosive Limits (% by volume in air) Lower dn % Upper dn %
Recommended Extinguishing Agents CO2, Foam, Dry Chemical
Hazardous Products Formed by Fire or Thermal Decomposition: Toxic Fluorides
Unusual Fire or Explosion Hazards: None
Compressed Gasses Name None
Pressure at Room Temperature _____

VI. REACTIVITY DATA

Stability ☒ Stable ☐ Unstable
Hazardous Polymerization ☐ May Occur ☒ Will Not Occur
Hazardous Decomposition Products (non-thermal)
None
Incompatibility None

VII. SPILL OR LEAK AND DISPOSAL PROCEDURES

Steps to be taken in case of spill or leak: Soak up in an inert absorbent. Store in partly filled, closed container until disposal.

Recommended methods of disposal: Bury or incinerate in accordance with EPA and local regulations.

VIII. STORAGE AND HANDLING PROCEDURES

Storage: Store below 110°F to preserve shelf life.
Handling: Avoid prolonged skin contact. Do not use for prolonged periods in confined area without adequate ventilation.

IX. SHIPPING REGULATIONS

Type or Class DOT Unrestricted
IATA Unrestricted

Prepared By: Martin Hauser
Title: Vice President - Environmental Health and Safety
Date: November 1, 1985

TRW-01903

0908-3281



MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Product Name GASKET ELIMINATOR® 515 SEALANT Part No. 515
Product Type Anaerobic Formula No. _____

II. COMPOSITION

<u>Ingredients</u>	<u>% by Wt.</u>	<u>Hazard</u>
Polyurethane Methacrylate Resins	70-75	See Section IV. ↓
Polyglycol Dimethacrylates	10-15	
Acrylic Acid*****	5-7	
Silicon Dioxide****	4-5	
Cumene Hydroperoxide*	3-4	
Saccharin**	<2	
Acetylphenylhydrazine***	<1	

*In a single test, pure cumene hydroperoxide caused tumors in one of thirty experimental animals when injected under the skin. **Saccharin has been shown to cause tumors in experimental animals when fed in large amounts for prolonged periods. ***Acetylphenylhydrazine has been shown to cause tumors in experimental animals when fed in large amounts for prolonged periods. ****Inhalation of pure silicon dioxide dust has been shown to cause pulmonary effects. *****Pure acrylic acid has been shown to cause reproductive effects in experimental animals when injected into the peritoneal cavity in high doses. In light of the low concentration of these components in the product, it is our best technical judgment that normal use of this product poses no such hazard. These warnings are present only to comply with OSHA regulations.

III. CHEMICAL AND PHYSICAL PROPERTIES

Vapor Pressure	<u>< 10 mm at 80°F</u>	Specific Gravity	<u>1.1 at 80°F</u>
Vapor Density	<u>Unknown</u>	Boiling Point	<u>> 300°F</u>
Solubility in Water	<u>Slight</u>	pH	<u>dna</u>
Appearance	<u>Purple Gel</u>	Odor	<u>Sharp, Irritating</u>

IV. TOXICITY AND HEALTH HAZARD DATA

Toxicity Skin and eye irritant.
Oral LD50 >5000 mg/kg TLV Does not apply
Dermal LD50 >2000 mg/kg
Symptoms of Overexposure May cause dermatitis on prolonged contact in sensitive individuals.

Emergency Treatment Procedures

Ingestion: Do not induce vomiting. Keep individual calm. Obtain medical attention.
Inhalation: Does not apply.
Skin Contact: Flush thoroughly with water.
Eye Contact: Flush at least 15 minutes with water. Obtain medical attention.

Personal Protection

Eyes: Safety glasses or goggles mandatory.
Skin: Rubber or plastic gloves.
Ventilation: Not normally necessary

V. FLAMMABILITY AND EXPLOSIVE PROPERTIES

Flash point > 200°F Method TCC
Explosive Limits (% by volume in air) Lower dna % Upper dna %
Recommended Extinguishing Agents CO2, Foam, Dry Chemical
Hazardous Products Formed by Fire or Thermal Decomposition: Irritating organic vapors.
Unusual Fire or Explosion Hazards: None
Compressed Gasses Name None
Pressure at Room Temperature _____

VI. REACTIVITY DATA

Stability ☒ Stable ☐ Unstable
Hazardous Polymerization ☐ May Occur ☒ Will Not Occur
Hazardous Decomposition Products (non-thermal)
None

Incompatibility None

VII. SPILL OR LEAK AND DISPOSAL PROCEDURES

Steps to be taken in case of spill or leak: Soak up in an inert absorbent. Store in partly filled, closed container until disposal.

Recommended methods of disposal: Bury or incinerate in accordance with EPA and local regulations.

VIII. STORAGE AND HANDLING PROCEDURES

Storage: Store below 110°F to preserve shelf-life.
Handling: Avoid prolonged skin contact. Keep away from eyes.

IX. SHIPPING REGULATIONS

Type or Class DOT Unrestricted
IATA Unrestricted

Prepared By: Martin Hauser
Title: Vice President - Environmental Health and Safety
Date: November 1, 1985

MATERIAL SAFETY DATA SHEET
FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION 5/01/92

PAGE 1

MANUFACTURER'S NAME : MORTON COATINGS INC.
ADDRESS : CHICOPEE FACILITY
ADDRESS : 40 HAYNES CIRCLE
CITY, STATE : CHICOPEE, MA 01020

EMERGENCY TELEPHONE NO. DAY: 413-592-4191 NIGHT: 800-424-9300
INFORMATION TELEPHONE NO. DAY: 413-592-4191 NIGHT: 800-424-9300

SECTION I PRODUCT IDENTIFICATION

Manufacturer's Code Identification: X7756 Revision : 01
Product Class: PLASTISOL
Trade Name: GREY CHEM-O-SOL
HMIS Information Health- 1* Flammability- 1
Reactivity- 0 Personal Protective Equipment-

SECTION II HAZARDOUS INGREDIENTS

INGREDIENT	CAS#	% BY WEIGHT	OSHA-PEL	ACGIH-TLV	VAPOR PRESSURE MMHg @68°F	LEL	SARA 313	OTHER
MATERIAL DESCRIPTION								
TRIBASIC LEAD SULFATE	UNKNOWN	1.73	0.05 MG/M3	0.05 MG/M3	.99	N/A	YES	(AS LEAD)

SECTION III PHYSICAL DATA

BOILING RANGE, DEG. F HIGH N/E LOW N/E
VAPOR PRESSURE, MM HG .99
VAPOR DENSITY LIGHTER THAN AIR
EVAPORATION RATE SLOWER THAN ETHER
WEIGHT PER GALLON, LBS. 9.8
% VOLATILE BY VOLUME N/A
% VOLATILE BY WEIGHT N/A N/A = NOT APPLICABLE N/E = NOT ESTABLISHED
PH - SOLUBILITY- N/A

MANUFACTURER'S CODE: X7956 Revision: 01 DATE OF PREPARATION- 5/01/92

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION: OSHA-CLASS III-B DOT- NOT REGULATED
LOWEST FLASHPOINT T.C.C., DEG. F > 200.0 LOWER EXPLOSION LEVEL (LEL)

EXTINGUISHING MEDIA: 'Alcohol' Foam, CO2, Dry Chemical.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: Water spray may be used to cool closed containers during a fire to prevent explosion due to steam build-up.

SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: Irritating to eyes, skin, nose and throat. Head-aches, dizziness and nausea can result. COULD BE TOXIC IF INGESTED. SEE SECTION IX FOR FURTHER HEALTH INFORMATION.

DOES THIS PRODUCT CONTAIN ANY CHEMICALS CLASSIFIED AS KNOWN OR SUSPECTED CARCINOGENS (NTP/IARC/OSHA/ACGIH)? (XXX)-YES(If contains chromates) ()-NO

PRIMARY ROUTE(S) OF ENTRY: (XXX)-DERMAL (XXX)-INHALATION ()-INGESTION

EMERGENCY AND FIRST AID PROCEDURES: INHALATION-Remove to fresh air. Restore breathing. CONSULT A PHYSICIAN. SPLASH (EYES)-Flush with water for at least 15 minutes. CONSULT A PHYSICIAN. SPLASH (SKIN)-Wash affected areas with soap and water. Remove contaminated clothing. CONSULT A PHYSICIAN IF IRRITATION PERSISTS. INGESTION-Drink 1 or 2 glasses of water to dilute. Do NOT induce vomiting. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: Pre-existing skin disorders, chronic respiratory disease, anemia (if product contains lead.)

SECTION VI -- REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: None reasonably foreseeable.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None reasonably foreseeable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Add absorbent to spill area. Recover free liquid. Keep chemical products out of streams and waterways.

WASTE DISPOSAL METHOD: In accordance with local, state, and federal regulations.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: As needed to keep air contaminant exposure below TLV or PEL.

VENTILATION: Must keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limit (PEL) or ACGIH's Threshold Limit Value (TLV).

PROTECTIVE GLOVES: As required to avoid skin contact.

EYE PROTECTION: Chemical safety goggles or face shields should be worn in any industrial setting.

OTHER PROTECTIVE EQUIPMENT: Remove and wash contaminated clothing before re-use.

HYGIENIC PRACTICES: Wash hands before smoking, eating, or using toilet facilities.

0908-3285

TRW-01907

MANUFACTURER'S CODE: X7956

Revision : 01

DATE OF PREPARATION: 5/01/92

SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep container closed.

Use with adequate ventilation.

OTHER PRECAUTIONS: Avoid contact with eyes and prolonged or repeated contact with skin. DO NOT INGEST.

*MAY CONTAIN ONE OR MORE OF THE FOLLOWING (see Section II for ingredients):

(1) LEAD. Repeated and prolonged exposure to lead may cause delayed effects involving the blood, gastrointestinal, nervous and reproductive systems.

(2) CHROMATES. Chromium and certain chromium compounds are listed as known carcinogens by the NTP & IARC.

Keep exposures to these substances below the current ACGIH TLV or OSHA PEL.

THESE DATA RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL.

MSDS:02

Prepared by: L. Dussault

0908-3286

TRW-01908

MORTON COATINGS INC.
HAYNES CIRCLE
CHICOPEE MA. 01002-3794

*
* MATERIAL SAFETY DATA SHEET *
*

TRW FASTENERS DIV
120 ROGERS STREET

CAMBRIDGE

MA 02142-0000

ATTENTION: Safety Director

DEAR CUSTOMER,

ENCLOSED PLEASE FIND UPDATED MSDS IN ACCORDANCE WITH THE OSHA
HAZARD COMMUNICATION STANDARD (29CFR1910.1200) FOR A PRODUCT
YOU RECENTLY ORDERED. IF YOU REQUIRE ANY ADDITIONAL MSDS
PLEASE REQUEST BY ENTERING THE PRODUCT ID IN THE SPACES PROVIDED
BELOW. FOLD REQUEST WITH RETURN ADDRESS FACING OUTWARD.

REQUEST FOR ADDITIONAL MSDS

LIST PRODUCT NUMBERS

1. _____ 2. _____

THIS PRODUCT CONTAINS A TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING
REQUIREMENTS OF SECTION 313 OF SARA TITLE III AND OF 40CFR372 IF "YES" IS PRINT-
ED IN THE COLUMN LABELED "SARA 313 IN SECTION II OF THE MSDS."

(STAPLE)

TRW FASTENERS DIV
120 ROGERS STREET

CAMBRIDGE

MA
02142-0000

PLACE
POSTAGE
HERE

MORTON COATINGS INC.
HAYNES CIRCLE
CHICOPEE MA 01020-3794

0908-3287

ATTN: LAURIE DUSSAULT

TRW-01909

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

RECEIVED

MATERIAL SAFETY DATA SHEET

JUN 10 1985

D. BORSUK

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shiptbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME POLAR CHIP, INC.		EMERGENCY TELEPHONE NO. (714) 751-4771 or 645-7187
ADDRESS (Number, Street, City, State, and ZIP Code) 17421 Murphy Avenue Irvine, CA 92714		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY	FORMULA Proprietary	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A			ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212°	SPECIFIC GRAVITY (H ₂ O=1)	1.02
VAPOR PRESSURE (mm Hg.)	22	PERCENT VOLATILE BY VOLUME (%)	81
VAPOR DENSITY (AIR=1)	0.64	EVAPORATION RATE (water =1)	1
SOLUBILITY IN WATER	infinite		
APPEARANCE AND ODOR	Yellow liquid - mild odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS	N/A			

TRW-01910

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	
EFFECTS OF OVEREXPOSURE	
EMERGENCY AND FIRST AID PROCEDURES	
In case of ingestion, induce vomiting. Eyes, rinse with isotonic solution. Skin, rinse with water, use hand lotion or cream.	

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	XX	
INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS			
In event of fire oxides of nitrogen may fume.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	XX	Contact with oxidizable chemicals in evaporated state.

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Mop up and rinse area with water.	
WASTE DISPOSAL METHOD	
May be disposed of in primary sewage treatment in absence of tramp oil.	

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type)		
Not required		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES		EYE PROTECTION
None		Safety glasses
OTHER PROTECTIVE EQUIPMENT		
Hand cream, if desired		

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
For safety reasons, none. For accidental contact, rinse with water. Wear goggles as with handling any liquid.	
OTHER PRECAUTIONS	
None.	

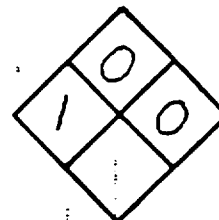


17421 Murphy Ave., Irvine, CA 92714
(714) 863-9211

STANDARD NO.	MSDS NO.
	POLAR CLEAN 112

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME POLAR CLEAN 112	SYNONYMS Alkaline Cleaner
MANUFACTURER'S NAME POLAR CHIP INC.	REGULAR PHONE NO. 714-863-9211
ADDRESS (NO., STREET, CITY, STATE, ZIP CODE) 17421 Murphy Ave., Irvine, CA 92714	EMERGENCY PHONE NO.



SECTION 2 INGREDIENTS (LIST ALL)

MATERIAL OR COMPONENT	HAZARD DATA (TLV, LD50 OR LC50)
CAS# 64742-47-8 (C ₁₀ -C ₁₂ Aliphatic Hydro Carbon 3%)	
CAS# 6834-92-0 Sodiummetasilicate 0.3%	
CAS# 9004-83-5 C ₁₂ Thioether 6%	
CAS# 57-55-6 Propylene Glycol 1%	
Water	

SECTION 3 PHYSICAL DATA

BOILING POINT, 760mm	212° F	MELTING POINT	30° F
SPECIFIC GRAVITY (H ₂ O = 1)	1.03	VAPOR PRESSURE	22mm
VAPOR DENSITY (AIR = 1)	0.64	SOLUBILITY IN H ₂ O % BY WEIGHT	100 %
% VOLATILES BY VOLUME	90	EVAPORATION RATE (Water = 1)	1
APPEARANCE AND ODOR:	Yellow liquid, mild odor		

SECTION 4 FIRE AND EXPLOSION DATA

FLASH POINT (TEST METHOD)	No flash COC	AUTOIGNITION TEMPERATURE	800° F	FLAMMABLE LIMITS IN AIR % BY VOLUME	LOWER ---	UPPER ---
EXTINGUISHING MEDIA	Water, CO ₂ , Dry Powder					
SPECIAL FIRE FIGHTING PROCEDURES	Use of Chlorinated solvent fire extinguishers should be avoided.					
UNUSUAL FIRE AND EXPLOSION HAZARD	Oxides of sulfur may be generated in a raging fire. Full self-contained breathing apparatus fire protection suits are recommended.					

TRW-01912

MATERIAL SAFETY DATA SHEET

PAGE 1 OF 4

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MATERIAL SAFETY DATA SHEET

MSDS NO.

POLAR CLEAN 112

SECTION 7 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Mop up or use dry absorbents.

NEUTRALIZING CHEMICALS:

WASTE DISPOSAL METHOD:

May be disposed of according to local, state, and federal regulations.

SECTION 8 SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

Material does not give off hazardous vapors. If work conditions generate mist, ventilation (100 linear feet/minute) is recommended.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY (SPECIFY IN DETAIL)

Face respirator is not required. If a mist is being formed by working conditions supply ventilation.

EYE:

Goggles or face shield, if needed.

GLOVES:

Plastic or rubber if needed.

OTHER CLOTHING AND EQUIPMENT:

None required

SECTION 9 TRANSPORTATION DATA

HAZARDOUS CHARACTERISTICS

☐ CORROSIVE

☐ FLAMMABLE LIQUID

☐ FLAMMABLE SOLIDS

☐ EXPLOSIVES

☐ OXIDIZER

☐ POISON

☐ MAGNETIC

☐ NON-FLAMMABLE G

☐ FLAMMABLE GAS

☐ RADIOACTIVE

☒ NONE

☐ OTHER

D.O.T.

CLASSIFICATION

Class 60

FLASH
POINT

°C

DO NOT WRITE BELOW THIS LINE

ARTICLE NO.	LABEL(S)	PACKAGING		NET QUANTITIES	
		EXCEPTIONS	SPEC. REQ'T.	PASSENGER	CARGO

COMMENTS:

TRW-01913

MATERIAL SAFETY DATA SHEET

MSDS No.

POLAR CLEAN 112

SECTION 5 HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA

ROUTES OF EXPOSURE

INHALATION: -none-

SKIN CONTACT:

Through splashing or spilling.

SKIN ABSORPTION:

-none-

EYE CONTACT:

Splashing or transfer to eyes by contaminated hands.

INGESTION:

Transfer to food by contaminated hands.

EFFECTS OF OVEREXPOSURE

ACUTE:

May irritate skin with prolonged contact.

CHRONIC:

Not known.

EMERGENCY AND FIRST AID PROCEDURES

EYES:

Flush eyes with water or isotonic solution - see physician.

SKIN:

Rinse off with water - wash with soap and water.

INHALATION:

Move to clean air - provide ventilation.

INGESTION:

Give water.

NOTES TO PHYSICIAN:

Danger to eyes is mostly from infection of eyes after protective eye fluids are removed. Provide anti-infection and local anesthetic solution.

SECTION 6 REACTIVITY DATA

STABILITY:

☒ STABLE

☐ UNSTABLE

CONDITION TO AVOID:

Substances that react with water.

INCOMPATIBILITY:

Substances that react with water.

HAZARDOUS DECOMPOSITION PRODUCTS:

In a raging fire, oxides of sulfur may be evolved.

HAZARDOUS POLYMERIZATION:

☒ WILL NOT OCCUR

☐ WILL OCCUR

CONDITIONS TO AVOID:

A raging fire.

TRW-01914

MATERIAL SAFETY DATA SHEET

MSDS NO.

POLAR CLEAN 112

SECTION 10 SPECIAL PRECAUTIONS

STORAGE:

☒ OUTDOOR
STORAGE PERMITTED
(if above 32°F)

☐ INDOOR STORAGE
REQUIRED - NO TEMP. CONTROL

☐ STORE UNDER CONTROLLED
TEMP. X RANGE 30°F TO 120°F °F

HANDLING:

Good housekeeping and prudent care will be sufficient to avoid problems.

OTHER:

PREPARED BY:

Keith R. Whitcomb

TITLE

Chief Chemist

DATE

October 14, 1986

ADDRESS

17421 Murphy Ave., Irvine, CA 92714

TRW-01915

MATERIAL SAFETY
DATA SHEET

Ashland Chemical Company

DIVISION OF ASHLAND OIL, INC.

P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 889-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133



000109

POLYPRO HIMONT 6523 NATURAL

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: POLYPRO HIMONT 6523 NATURAL

FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
265 THIRD STREET
CAMBRIDGE MA 02142

OA 53 014 8796550-

Data Sheet No: 0162815-001
Prepared: 09/01/88
Supersedes: (N/A)PRODUCT: 5905860
INVOICE: 739003
INVOICE DATE: 09/01/88
TO: FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
180 STATE ROAD RTE 2A
WESTMINSTER MA 02677

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

General or Generic ID: THERMOPLASTIC RESIN

DOT Hazard Classification: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
POLYPROPYLENE HOMOPOLYMER	100			(1)

Notes:

(1) PEL/TLV NOT ESTABLISHED. THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 29 CFR 1910.1200 (OSHA HAZARD COMMUNICATION STANDARD).

SECTION III-PHYSICAL DATA

Boiling Point	NOT APPLICABLE
Vapor Pressure	NOT APPLICABLE
Specific Vapor Density	NOT APPLICABLE
Specific Gravity	UNAVAILABLE
Percent Volatiles	NOT APPLICABLE
Evaporation Rate	NOT APPLICABLE

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS: , CARBON DIOXIDE AND CARBON MONOXIDE, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE AND FULL BODY PROTECTION WHEN FIGHTING FIRES.

WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

SPECIAL FIRE & EXPLOSION HAZARDS: DUST MAY BE AN EXPLOSION HAZARD.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

CONTACT WITH MOLTEN MATERIAL WILL CAUSE THERMAL BURNS.

FIRST AID:

IF ON SKIN: SHOULD MOLTEN MATERIAL STRIKE THE SKIN, IMMEDIATELY FLUSH WITH COLD WATER TO COOL AND SOLIDIFY THE MATERIAL. GET IMMEDIATE MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH: , STRONG OXIDIZING AGENTS.

0908-3294

**MATERIAL SAFETY
DATA SHEET**

000109

POLYPRO HIMONT 6523 NATURAL**Page: 2****~~SECTION VII-SPILL OR LEAK PROCEDURES~~****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:****SMALL SPILL: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY.****LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.****WASTE DISPOSAL METHOD:****SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.****LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.****~~SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED~~****RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.****VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.****PROTECTIVE GLOVES: WEAR RESISTANT GLOVES (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER).****EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)****OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.****~~SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS~~****CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.****THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.****TRW-01917**

**MATERIAL SAFETY
DATA SHEET****Ashland Chemical Company**

DIVISION OF ASHLAND OIL, INC.

P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 889-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

**DEFINITIONS**

This definition page is intended for use with Material Safety Data Sheets supplied by the Ashland Chemical Company. Recipients of these data sheets should consult the OSHA Safety and Health Standards (29 CFR 1910), particularly subpart G - Occupational Health and Environmental Control, and subpart I - Personal Protective Equipment, for general guidance on control of potential Occupational Health and Safety Hazards.

**SECTION I
PRODUCT IDENTIFICATION**

GENERAL OR GENERIC ID: Chemical family or product description.

DOT HAZARD CLASSIFICATION: Product meets DOT criteria for hazards listed.

**SECTION II
COMPONENTS**

Components are listed in this section if they present a physical or health hazard and are present at or above 1% in the mixture. If a component is identified as a CARCINOGEN by NTP, IARC or OSHA as of the date on the MSDS, it will be listed and footnoted in this section when present at or above 0.1% in the product. Negative conclusions concerning carcinogenicity are not reported. Additional information may be found in Section V. Other components may be listed if deemed appropriate.

Identities of components listed generically are declared trade secret.

Exposure recommendations are for components. OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) appear on the line with the component identification. Other recommendations appear as footnotes.

**SECTION III
PHYSICAL DATA**

BOILING POINT: Of product if known. The lowest value of the components is listed for mixtures.

VAPOR PRESSURE: Of product if known. The highest value of the components is listed for mixtures.

SPECIFIC VAPOR DENSITY: Compared to AIR = 1. If Specific Vapor Density of product is not known, the value is expressed as lighter or heavier than air.

SPECIFIC GRAVITY: Compared to WATER = 1. If Specific Gravity of product is not known, the value is expressed as less than or greater than water.

pH: If applicable.

PERCENT VOLATILES: Percentage of material with initial boiling point below 425 degrees Fahrenheit.

EVAPORATION RATE: Indicated as faster or slower than ETHYL ETHER, unless otherwise stated.

**SECTION IV
FIRE AND EXPLOSION DATA**

FLASH POINT: Method identified.

EXPLOSION LIMITS: For product if known. The lowest value of the components is listed for mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: Known or expected hazardous products resulting from heating, burning or other reactions.

SECTION IV (cont.)

EXTINGUISHING MEDIA: Following National Fire Protection Association criteria.

FIREFIGHTING PROCEDURES: Minimum equipment to protect firefighters from toxic products of vaporization, combustion or decomposition in fire situations. Other firefighting hazards may also be indicated.

SPECIAL FIRE AND EXPLOSION HAZARDS: States hazards not covered by other sections.

NFPA CODES: Hazard ratings assigned by the National Fire Protection Association.

**SECTION V
HEALTH HAZARD DATA**

PERMISSIBLE EXPOSURE LIMIT: For product.

THRESHOLD LIMIT VALUE: For product.

EFFECTS OF ACUTE OVEREXPOSURE: Potential local and systemic effects due to single or short term overexposure to the eyes and skin or through inhalation or ingestion.

EFFECTS OF CHRONIC OVEREXPOSURE: Potential local and systemic effects due to repeated or long term overexposure to the eyes and skin or through inhalation or ingestion.

FIRST AID: Procedures to be followed when dealing with accidental overexposure.

PRIMARY ROUTE OF ENTRY: Based on properties and expected use.

**SECTION VI
REACTIVITY DATA**

HAZARDOUS POLYMERIZATION: Conditions to avoid to prevent hazardous polymerization resulting in a large release of energy.

STABILITY: Conditions to avoid to prevent hazardous or violent decomposition.

INCOMPATIBILITY: Materials and conditions to avoid to prevent hazardous reactions.

**SECTION VII
SPILL OR LEAK PROCEDURES**

Reasonable precautions to be taken and methods of containment, clean-up and disposal. Consult federal, state and local regulations for accepted procedures and any reporting or notification requirements.

**SECTION VIII
PROTECTIVE EQUIPMENT TO BE USED**

Protective equipment which may be needed when handling the product.

**SECTION IX
SPECIAL PRECAUTIONS OR OTHER COMMENTS**

Covers any relevant points not previously mentioned.

ADDITIONAL COMMENTS

Containers should be either reconditioned by CERTIFIED firms or properly disposed of by APPROVED firms. Disposal of containers should be in accordance with applicable laws and regulations. "EMPTY" drums should not be given to individuals. Serious accidents have resulted from the misuse of "EMPTIED" containers (drums, pails, etc.). Refer to Sections IV and IX.

MATERIAL SAFETY
DATA SHEET

000081

POLYPRO HIMONT 7523 NATURAL

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: POLYPRO HIMONT 7523 NATURAL

FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
265 THIRD STREET
CAMBRIDGE MA 02142

0A 53 014 8796550-

Data Sheet No: 0162828-001
Prepared: 07/29/88
Supersedes: (N/A)PRODUCT: 5905872
INVOICE: 534486
INVOICE DATE: 06/07/88
TO: FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
180 STATE ROAD RTE 2A
WESTMINSTER MA 01477

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

General or Generic ID: THERMOPLASTIC RESIN

DOT Hazard Classification: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
PROPYLENE-ETHYLENE COPOLYMER	100			(1)

Notes:

(1) PEL/TLV NOT ESTABLISHED. THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 29 CFR 1910.1200 (OSHA HAZARD COMMUNICATION STANDARD).

SECTION III-PHYSICAL DATA

Boiling Point	NOT APPLICABLE
Vapor Pressure	NOT APPLICABLE
Specific Vapor Density	NOT APPLICABLE
Specific Gravity	LESS THAN WATER
Percent Volatiles	NOT APPLICABLE
Evaporation Rate	NOT APPLICABLE

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE AND FULL BODY PROTECTION WHEN FIGHTING FIRES.

WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

SPECIAL FIRE & EXPLOSION HAZARDS: DUST MAY BE AN EXPLOSION HAZARD.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

CONTACT WITH MOLTEN MATERIAL WILL CAUSE THERMAL BURNS.

FIRST AID:

IF ON SKIN: SHOULD MOLTEN MATERIAL STRIKE THE SKIN, IMMEDIATELY FLUSH WITH COLD WATER TO COOL AND SOLIDIFY THE MATERIAL. GET IMMEDIATE MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

**MATERIAL SAFETY
DATA SHEET**

000081

POLYPRO HIMONT 7523 NATURAL**Page: 2****~~SECTION VII-SPILL OR LEAK PROCEDURES~~****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

SMALL SPILL: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

~~SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED~~

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER).

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

~~SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS~~

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

TRW-01920

**MATERIAL SAFETY
DATA SHEET****Ashland Chemical Company**

DIVISION OF ASHLAND OIL, INC.

P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 889-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

**DEFINITIONS**

This definition page is intended for use with Material Safety Data Sheets supplied by the Ashland Chemical Company. Recipients of these data sheets should consult the OSHA Safety and Health Standards (29 CFR 1910), particularly subpart G - Occupational Health and Environmental Control, and subpart I - Personal Protective Equipment, for general guidance on control of potential Occupational Health and Safety Hazards.

**SECTION I
PRODUCT IDENTIFICATION**

GENERAL OR GENERIC ID: Chemical family or product description.

DOT HAZARD CLASSIFICATION: Product meets DOT criteria for hazards listed.

**SECTION II
COMPONENTS**

Components are listed in this section if they present a physical or health hazard and are present at or above 1% in the mixture. If a component is identified as a CARCINOGEN by NTP, IARC or OSHA as of the date on the MSDS, it will be listed and footnoted in this section when present at or above 0.1% in the product. Negative conclusions concerning carcinogenicity are not reported. Additional information may be found in Section V. Other components may be listed if deemed appropriate.

Identities of components listed generically are declared trade secret.

Exposure recommendations are for components. OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) appear on the line with the component identification. Other recommendations appear as footnotes.

**SECTION III
PHYSICAL DATA**

BOILING POINT: Of product if known. The lowest value of the components is listed for mixtures.

VAPOR PRESSURE: Of product if known. The highest value of the components is listed for mixtures.

SPECIFIC VAPOR DENSITY: Compared to AIR = 1. If Specific Vapor Density of product is not known, the value is expressed as lighter or heavier than air.

SPECIFIC GRAVITY: Compared to WATER = 1. If Specific Gravity of product is not known, the value is expressed as less than or greater than water.

pH: If applicable.

PERCENT VOLATILES: Percentage of material with initial boiling point below 425 degrees Fahrenheit.

EVAPORATION RATE: Indicated as faster or slower than ETHYL ETHER, unless otherwise stated.

**SECTION IV
FIRE AND EXPLOSION DATA**

FLASH POINT: Method identified.

EXPLOSION LIMITS: For product if known. The lowest value of the components is listed for mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: Known or expected hazardous products resulting from heating, burning or other reactions.

SECTION IV (cont.)

EXTINGUISHING MEDIA: Following National Fire Protection Association criteria.

FIREFIGHTING PROCEDURES: Minimum equipment to protect firefighters from toxic products of vaporization, combustion or decomposition in fire situations. Other firefighting hazards may also be indicated.

SPECIAL FIRE AND EXPLOSION HAZARDS: States hazards not covered by other sections.

NFPA CODES: Hazard ratings assigned by the National Fire Protection Association.

**SECTION V
HEALTH HAZARD DATA**

PERMISSIBLE EXPOSURE LIMIT: For product.

THRESHOLD LIMIT VALUE: For product.

EFFECTS OF ACUTE OVEREXPOSURE: Potential local and systemic effects due to single or short term overexposure to the eyes and skin or through inhalation or ingestion.

EFFECTS OF CHRONIC OVEREXPOSURE: Potential local and systemic effects due to repeated or long term overexposure to the eyes and skin or through inhalation or ingestion.

FIRST AID: Procedures to be followed when dealing with accidental overexposure.

PRIMARY ROUTE OF ENTRY: Based on properties and expected use.

**SECTION VI
REACTIVITY DATA**

HAZARDOUS POLYMERIZATION: Conditions to avoid to prevent hazardous polymerization resulting in a large release of energy.

STABILITY: Conditions to avoid to prevent hazardous or violent decomposition.

INCOMPATIBILITY: Materials and conditions to avoid to prevent hazardous reactions.

**SECTION VII
SPILL OR LEAK PROCEDURES**

Reasonable precautions to be taken and methods of containment, clean-up and disposal. Consult federal, state and local regulations for accepted procedures and any reporting or notification requirements.

**SECTION VIII
PROTECTIVE EQUIPMENT TO BE USED**

Protective equipment which may be needed when handling the product.

**SECTION IX
SPECIAL PRECAUTIONS OR OTHER COMMENTS**

Covers any relevant points not previously mentioned.

ADDITIONAL COMMENTS

Containers should be either reconditioned by CERTIFIED firms or properly disposed of by APPROVED firms. Disposal of containers should be in accordance with applicable laws and regulations. "EMPTY" drums should not be given to individuals. Serious accidents have resulted from the misuse of "EMPTIED" containers (drums, pails, etc.). Refer to Sections IV and IX.

MATERIAL SAFETY
DATA SHEET

000003197

POLYPRO HIMONT PP65-F4-2 NT

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: POLYPRO HIMONT PP65-F4-2 NT

FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
265 THIRD STREET
CAMBRIDGE MA 02142

OA 53 014 8796550-

Data Sheet No: 0169160-001
Prepared: 04/27/88
Supersedes: (N/A)PRODUCT: 5915876
INVOICE: 555214
INVOICE DATE: 06/15/88
TO: FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
180 STATE ROAD RTE 2A
WESTMINSTER MA 01477

ATTN: PLANT MGR./SAFETY DIR.

SECTION II-PRODUCT IDENTIFICATION

General or Generic ID: THERMOPLASTIC RESIN

DOT Hazard Classification: NOT APPLICABLE

SECTION III-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
FILLED POLYPROPYLENE HOMOPOLYMER	100			(1)

Notes:

(1) PEL/TLV NOT ESTABLISHED. THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 29 CFR 1910.1200 (OSHA HAZARD COMMUNICATION STANDARD).

SECTION III-Physical Data

Boiling Point	NOT APPLICABLE
Vapor Pressure	NOT APPLICABLE
Specific Vapor Density	NOT APPLICABLE
Specific Gravity	.900 - 1.350 2 77.00 Deg F (25.00 Deg C)
Percent Volatiles	NOT APPLICABLE
Evaporation Rate	NOT APPLICABLE

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT 625.0 Deg F (329.4 Deg C)

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE AND FULL BODY PROTECTION WHEN FIGHTING FIRES.

WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

SPECIAL FIRE & EXPLOSION HAZARDS: DUST MAY BE AN EXPLOSION HAZARD.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

CONTACT WITH MOLTEN MATERIAL WILL CAUSE THERMAL BURNS.

FIRST AID:

IF ON SKIN: SHOULD MOLTEN MATERIAL STRIKE THE SKIN, IMMEDIATELY FLUSH WITH COLD WATER TO COOL AND SOLIDIFY THE MATERIAL. GET IMMEDIATE MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

**MATERIAL SAFETY
DATA SHEET**

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

000003197

POLYPRO HIMONT PP65-F4-2 NT**Page: 2****~~SECTION VII-SPILL OR LEAK PROCEDURES~~****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

SMALL SPILL: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

~~SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED~~

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER).

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

~~SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS~~

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

TRW-01923

**MATERIAL SAFETY
DATA SHEET****DEFINITIONS**

This definition page is intended for use with Material Safety Data Sheets supplied by the Ashland Chemical Company. Recipients of these data sheets should consult the OSHA Safety and Health Standards (29 CFR 1910), particularly subpart G - Occupational Health and Environmental Control, and subpart I - Personal Protective Equipment, for general guidance on control of potential Occupational Health and Safety Hazards.

**SECTION I
PRODUCT IDENTIFICATION**

GENERAL OR GENERIC ID: Chemical family or product description.

DOT HAZARD CLASSIFICATION: Product meets DOT criteria for hazards listed.

**SECTION II
COMPONENTS**

Components are listed in this section if they present a physical or health hazard and are present at or above 1% in the mixture. If a component is identified as a CARCINOGEN by NTP, IARC or OSHA as of the date on the MSDS, it will be listed and footnoted in this section when present at or above 0.1% in the product. Negative conclusions concerning carcinogenicity are not reported. Additional information may be found in Section V. Other components may be listed if deemed appropriate.

Identities of components listed generically are declared trade secret.

Exposure recommendations are for components. OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) appear on the line with the component identification. Other recommendations appear as footnotes.

**SECTION III
PHYSICAL DATA**

BOILING POINT: Of product if known. The lowest value of the components is listed for mixtures.

VAPOR PRESSURE: Of product if known. The highest value of the components is listed for mixtures.

SPECIFIC VAPOR DENSITY: Compared to AIR = 1. If Specific Vapor Density of product is not known, the value is expressed as lighter or heavier than air.

SPECIFIC GRAVITY: Compared to WATER = 1. If Specific Gravity of product is not known, the value is expressed as less than or greater than water.

pH: If applicable.

PERCENT VOLATILES: Percentage of material with initial boiling point below 425 degrees Fahrenheit.

EVAPORATION RATE: Indicated as faster or slower than ETHYL ETHER, unless otherwise stated.

**SECTION IV
FIRE AND EXPLOSION DATA**

FLASH POINT: Method identified.

EXPLOSION LIMITS: For product if known. The lowest value of the components is listed for mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: Known or expected hazardous products resulting from heating, burning or other reactions.

SECTION IV (cont.)

EXTINGUISHING MEDIA: Following National Fire Protection Association criteria.

FIREFIGHTING PROCEDURES: Minimum equipment to protect firefighters from toxic products of vaporization, combustion or decomposition in fire situations. Other firefighting hazards may also be indicated.

SPECIAL FIRE AND EXPLOSION HAZARDS: States hazards not covered by other sections.

NFPA CODES: Hazard ratings assigned by the National Fire Protection Association.

**SECTION V
HEALTH HAZARD DATA**

PERMISSIBLE EXPOSURE LIMIT: For product.

THRESHOLD LIMIT VALUE: For product.

EFFECTS OF ACUTE OVEREXPOSURE: Potential local and systemic effects due to single or short term overexposure to the eyes and skin or through inhalation or ingestion.

EFFECTS OF CHRONIC OVEREXPOSURE: Potential local and systemic effects due to repeated or long term overexposure to the eyes and skin or through inhalation or ingestion.

FIRST AID: Procedures to be followed when dealing with accidental overexposure.

PRIMARY ROUTE OF ENTRY: Based on properties and expected use.

**SECTION VI
REACTIVITY DATA**

HAZARDOUS POLYMERIZATION: Conditions to avoid to prevent hazardous polymerization resulting in a large release of energy.

STABILITY: Conditions to avoid to prevent hazardous or violent decomposition.

INCOMPATIBILITY: Materials and conditions to avoid to prevent hazardous reactions.

**SECTION VII
SPILL OR LEAK PROCEDURES**

Reasonable precautions to be taken and methods of containment, clean-up and disposal. Consult federal, state and local regulations for accepted procedures and any reporting or notification requirements.

**SECTION VIII
PROTECTIVE EQUIPMENT TO BE USED**

Protective equipment which may be needed when handling the product.

**SECTION IX
SPECIAL PRECAUTIONS OR OTHER COMMENTS**

Covers any relevant points not previously mentioned.

ADDITIONAL COMMENTS

Containers should be either reconditioned by CERTIFIED firms or properly disposed of by APPROVED firms. Disposal of containers should be in accordance with applicable laws and regulations. "EMPTY" drums should not be given to individuals. Serious accidents have resulted from the misuse of "EMPTIED" containers (drums, pails, etc.). Refer to Sections IV and IX.

**MATERIAL SAFETY
DATA SHEET**

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

**ENVIRONMENTAL and OCCUPATIONAL
SAFETY DEPARTMENT**

R. H. Toeniskoetter, Manager

**FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
265 THIRD STREET
CAMBRIDGE MA 02142****ATTN: PLANT MGR./SAFETY DIR.**

Dear Customer:

Ashland Chemical Company, through a computerized system, provides its customers with a material safety data sheet the first time a product is purchased. If the material safety data sheet is changed, a copy of the revised sheet is sent to customers who purchased the product in the previous twelve months. If a customer has not purchased a particular product for twelve months and then purchases it again, another copy of the material safety data sheet is sent.

The material safety data sheet is addressed to the attention of the **PLANT MANAGER/SAFETY DIRECTOR** and is mailed to the same address as the invoice. The shipping address is printed on the right side of the first page of the data sheet along with the invoice number and the invoice date. This information should help you direct the material safety data sheet to the proper location so that those who are responsible for managing or designing operations involving the use of the product, or who actually use or handle the product and may potentially be exposed to it, have access to the most current health and safety information available.

When an Ashland Chemical product is resold in the original package with an Ashland label, the reseller has the responsibility of distributing the Ashland material safety data sheet. If you use the Ashland products in your formulations, the health and safety information contained in the material safety data sheet may be used in the hazard evaluation of your product as described in 29 CFR 1910.1200 (Hazard Communication).

Ashland Chemical Company is committed to providing accurate health and safety information on the products that we manufacture or distribute. We have a program to continually review and revise our material safety data sheets to provide the most current information available. We also strive to improve the ways in which we communicate product safety information so that it is as clear as it is complete. We appreciate your continued business and assure you that we will take the steps necessary to ensure that the material safety data sheets are updated as needed.

MATERIAL SAFETY
DATA SHEET

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

000006

POLYPRO HIMONT PP65-F4-4 NT

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: POLYPRO HIMONT PP65-F4-4 NT

FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
265 THIRD STREET
CAMBRIDGE MA 02142

0A 53 014 8796550-

Data Sheet No: 0164328-001
Prepared: 04/27/88
Supersedes: (N/A)PRODUCT: 5905914
INVOICE: 701879
INVOICE DATE: 08/17/88
TO: FASTENERS DIVISION
TRW CONTROLS & FASTENERS GROU
180 STATE ROAD RTE 2A
WESTMINSTER MA 01477

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

General or Generic ID: THERMOPLASTIC RESIN

DOT Hazard Classification: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
FILLED POLYPROPYLENE HOMOPOLYMER	100			(1)

Notes:

(1) PEL/TLV NOT ESTABLISHED. THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 29 CFR 1910.1200 (OSHA HAZARD COMMUNICATION STANDARD).

SECTION III-PHYSICAL DATA

Boiling Point	NOT APPLICABLE
Vapor Pressure	NOT APPLICABLE
Specific Vapor Density	NOT APPLICABLE
Specific Gravity	.900 - 1.350 a 77.00 Deg F (25.00 Deg C)
Percent Volatiles	NOT APPLICABLE
Evaporation Rate	NOT APPLICABLE

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT > 625.0 Deg F (329.4 Deg C)

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE AND FULL BODY PROTECTION WHEN FIGHTING FIRES.

WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

SPECIAL FIRE & EXPLOSION HAZARDS: DUST MAY BE AN EXPLOSION HAZARD.

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

CONTACT WITH MOLTEN MATERIAL WILL CAUSE THERMAL BURNS.

FIRST AID:

IF ON SKIN: SHOULD MOLTEN MATERIAL STRIKE THE SKIN, IMMEDIATELY FLUSH WITH COLD WATER TO COOL AND SOLIDIFY THE MATERIAL. GET IMMEDIATE MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

**MATERIAL SAFETY
DATA SHEET**

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

000006

POLYPRO HIMONT PP65-F4-4 NT

Page: 2

SECTION VII-SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

SMALL SPILL: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER).

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

TRW-01927



MATERIAL SAFETY DATA SHEET

DEFINITIONS

This definition page is intended for use with Material Safety Data Sheets supplied by the Ashland Chemical Company. Recipients of these data sheets should consult the OSHA Safety and Health Standards (29 CFR 1910), particularly subpart G - Occupational Health and Environmental Control, and subpart I - Personal Protective Equipment, for general guidance on control of potential Occupational Health and Safety Hazards.

SECTION I PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: Chemical family or product description.

DOT HAZARD CLASSIFICATION: Product meets DOT criteria for hazards listed.

SECTION II COMPONENTS

Components are listed in this section if they present a physical or health hazard and are present at or above 1% in the mixture. If a component is identified as a CARCINOGEN by NTP, IARC or OSHA as of the date on the MSDS, it will be listed and footnoted in this section when present at or above 0.1% in the product. Negative conclusions concerning carcinogenicity are not reported. Additional information may be found in Section V. Other components may be listed if deemed appropriate.

Identities of components listed generically are declared trade secret.

Exposure recommendations are for components. OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) appear on the line with the component identification. Other recommendations appear as footnotes.

SECTION III PHYSICAL DATA

BOILING POINT: Of product if known. The lowest value of the components is listed for mixtures.

VAPOR PRESSURE: Of product if known. The highest value of the components is listed for mixtures.

SPECIFIC VAPOR DENSITY: Compared to AIR = 1. If Specific Vapor Density of product is not known, the value is expressed as lighter or heavier than air.

SPECIFIC GRAVITY: Compared to WATER = 1. If Specific Gravity of product is not known, the value is expressed as less than or greater than water.

pH: If applicable.

PERCENT VOLATILES: Percentage of material with initial boiling point below 425 degrees Fahrenheit.

EVAPORATION RATE: Indicated as faster or slower than ETHYL ETHER, unless otherwise stated.

SECTION IV FIRE AND EXPLOSION DATA

FLASH POINT: Method identified.

EXPLOSION LIMITS: For product if known. The lowest value of the components is listed for mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: Known or expected hazardous products resulting from heating, burning or other reactions.

SECTION IV (cont.)

EXTINGUISHING MEDIA: Following National Fire Protection Association criteria.

FIREFIGHTING PROCEDURES: Minimum equipment to protect firefighters from toxic products of vaporization, combustion or decomposition in fire situations. Other firefighting hazards may also be indicated.

SPECIAL FIRE AND EXPLOSION HAZARDS: States hazards not covered by other sections.

NFPA CODES: Hazard ratings assigned by the National Fire Protection Association.

SECTION V HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMIT: For product.

THRESHOLD LIMIT VALUE: For product.

EFFECTS OF ACUTE OVEREXPOSURE: Potential local and systemic effects due to single or short term overexposure to the eyes and skin or through inhalation or ingestion.

EFFECTS OF CHRONIC OVEREXPOSURE: Potential local and systemic effects due to repeated or long term overexposure to the eyes and skin or through inhalation or ingestion.

FIRST AID: Procedures to be followed when dealing with accidental overexposure.

PRIMARY ROUTE OF ENTRY: Based on properties and expected use.

SECTION VI REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Conditions to avoid to prevent hazardous polymerization resulting in a large release of energy.

STABILITY: Conditions to avoid to prevent hazardous or violent decomposition.

INCOMPATIBILITY: Materials and conditions to avoid to prevent hazardous reactions.

SECTION VII SPILL OR LEAK PROCEDURES

Reasonable precautions to be taken and methods of containment, clean-up and disposal. Consult federal, state and local regulations for accepted procedures and any reporting or notification requirements.

SECTION VIII PROTECTIVE EQUIPMENT TO BE USED

Protective equipment which may be needed when handling the product.

SECTION IX SPECIAL PRECAUTIONS OR OTHER COMMENTS

Covers any relevant points not previously mentioned.

ADDITIONAL COMMENTS

Containers should be either reconditioned by CERTIFIED firms or properly disposed of by APPROVED firms. Disposal of containers should be in accordance with applicable laws and regulations. "EMPTY" drums should not be given to individuals. Serious accidents have resulted from the misuse of "EMPTIED" containers (drums, pails, etc.). Refer to Sections IV and IX.



0163695

PAGE 1 OF 4

97002 (REV 1-83)

NAME _____

C.A.S. NUMBER 9003-07-0

MODERATE HIGH EXTREME
2 3 4

REACTIVITY	0
------------	---

INGREDIENTS

TOXICITY DATA
Not Determined

Acid Acceptor
Antioxidants
Processing Stabilizer
Mold Release Agent

HEALTH INFORMATION

Product is categorized as practically non-toxic; however, fines may cause mechanical irritation of eyes, nose and respiratory tract.

★45861
47272
48523

OCCUPATIONAL EXPOSURE LIMITS

to OSHA/PEL or ACGIH/TLV has been established.

TRW-01929

0908-3307



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

0163696
3,025-1
PAGE 2 OF 4

SECTION V

EMERGENCY AND FIRST AID PROCEDURES

If any irritation occurs due to fines, get medical attention.

SECTION VI

PHYSICAL DATA

BOILING POINT (°F) ▶ N.A.	MELTING POINT (°F) ▶ 320-330	VAPOR PRESSURE (mmHg) ▶ N.A.
SPECIFIC GRAVITY (H ₂ O=1) ▶ 0.901	% VOLATILE BY VOLUME ▶ N.A.	VAPOR DENSITY (AIR=1) ▶ N.A.
SOLUBILITY IN WATER ▶ Insoluble	EVAPORATION RATE (BUTYL ACETATE=1) ▶ N.A.	N.A. = Not Available

APPEARANCE AND ODOR

Solid pellet; essentially odorless

SECTION VII

FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR	LOWER	UPPER
N.A.	N.A.		

EXTINGUISHING MEDIA

Use water fog, foam, dry chemical or CO₂. Do not use a direct water stream. Avoid accumulation of water as product will float.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers, surrounding equipment and structures with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Fire as a solid that can burn. Molded parts generally burn slowly with a low smoke density and flaming drips. Under certain conditions can burn with a high smoke density.

TRW-01930

0908-3308



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

3,025-1
PAGE 3 OF 4

97004 (10-79)

SECTION VIII		REACTIVITY		0163695
STABILITY ▶	<input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	HAZARDOUS POLYMERIZATION ▶	<input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR	
CONDITIONS AND MATERIALS TO AVOID Strong oxidizing agents.				
HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide Organics of unknown chemical composition and toxicity.				

SECTION IX	EMPLOYEE PROTECTION
RESPIRATORY PROTECTION Not normally required.	
PROTECTIVE CLOTHING Not normally required.	
ADDITIONAL PROTECTIVE MEASURES Not normally required.	

SECTION X	ENVIRONMENTAL PROTECTION
SPILL OR LEAK PROCEDURES Scoop and sweep up or use industrial vacuum cleaner. Put into containers for reclaiming or disposal.	
WASTE DISPOSAL Dispose of in an appropriate disposal facility in compliance with local regulations.	
ENVIRONMENTAL HAZARDS --	

TRW-01931

0908-3309



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

0163695

3,025-1
PAGE 4 OF 4

SECTION XI

SPECIAL PRECAUTIONS

Treat as a solid that can burn. Store away from oxidizing materials in a cool, dry place with adequate ventilation.

Bond and ground transfer equipment to avoid static electricity discharges.

SECTION XII

TRANSPORTATION REQUIREMENTS

DEPARTMENT
OF
TRANSPORTATION
CLASSIFICATION

☐ FLAMMABLE LIQUID☐ COMBUSTIBLE LIQUID☐ OXIDIZING MATERIAL☐ NON-FLAMMABLE GAS☐ FLAMMABLE SOLID☐ POISON, CLASS A☐ CORROSIVE MATERIAL☒ NOT HAZARDOUS BY D.O.T. REGULATIONS☐ FLAMMABLE GAS☐ POISON, CLASS B☐ IRRITATING MATERIAL☐ OTHER—Specify below

D.O.T. PROPER SHIPPING NAME

OTHER REQUIREMENTS

SECTION XIII

SUPPLEMENTARY HEALTH/REGULATORY INFORMATION

TRW-01932

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from their use.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION
... AND
PASS IT ON

(PRODUCT LIABILITY LAW
REQUIRES IT)

John P. Lepore
Manager

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P.O. BOX 4320
HOUSTON, TEXAS 77210
(713) 241-4819

DATE PREPARED

February 28, 1983

0908-3310

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSSE, PA 19047
BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

REAGENT : ~~POTASSIUM CHROMATE INDICATOR~~ CODE 213 (PAGE 1 OF 3)
MASS. REG.# EFFECTIVE DATE: 02-10-92
PRINTED: 01-31-92
REVISIONS TO SECTIONS: -;EDIT:APPENDIX

REAGENT APPLICATION : FIELD TEST REAGENT

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC REAGENT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

POTASSIUM CHROMATE(CR VI)***CAS#7789-00-6;OXIDIZER;CORROSIVE;POTENTIAL SKIN SENSITIZER;POTENTIAL KIDNEY TOXIN;SUSPECT CARCINOGEN;
PEL:0.1MG/M3(CEILING)AS CR;TLV:0.05 MG/M3 AS CR. (11.0-15.0%)

ALTHOUGH EVIDENCE IS INCONCLUSIVE,EPA AND OSHA CONSIDER ALL CrVI COMPOUNDS POTENTIAL HUMAN CARCINOGENS.INCREASED RISK OF LUNG CANCER HAS BEEN OBSERVED IN CHROME PRODUCING,PLATING,ALLOY AND PIGMENT INDUSTRIES. RESULTS OF ANIMAL TESTS INDICATE SOME CrVI COMPOUNDS MAY BE CARCINOGENIC TO MAN BY INHALATION.IT IS THEREFORE PRUDENT TO TREAT ALL CrVI COMPOUNDS AS SUSPECT CARCINOGENS AND TO MINIMIZE WORKER EXPOSURE TO DUSTS/MISTS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 8.9	ODOR: NONE
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.013
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: ND		%SOLUBILITY(WATER): 100
EVAP.RATE: <1 ETHER=1		APPEARANCE: YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): ND

-----SECTION 3-----REACTIVITY DATA-----

STABLE. BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

TRW-01933

0908-3311

REAGENT POTASSIUM CHROMATE INDICATOR

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN.POTENTIAL SKIN SENSITIZER

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY;MAY INCREASE RISK OF CANCER;MAY CAUSE SKIN SENSITIZATION.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE IRRITATION OF RESPIRATORY TRACT;SKIN CONTACT MAY CAUSE ITCHING AND/OR REDNESS.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DILUTE CONTENTS OF STOMACH.INDUCE VOMITING BY ADMINISTERING SOAP SOLUTION EMETIC,OR OTHER STANDARD METHOD IF SOAP SOLUTION IS NOT AVAILABLE. IMMEDIATELY CONTACT A PHYSICIAN.

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

GENERAL-VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

SPECIFIC- SPILL RESIDUE MAY BE REDUCED WITH ACID BISULFITE SOLUTION DISPOSAL INSTRUCTIONS***

FOR DISPOSAL USE A COMMERCIAL WASTE TREATMENT OR DISPOSAL COMPANY OR IN-HOUSE USE A CHROMATE REMOVAL SYSTEM IN ACCORDANCE WITH RCRA REGULATIONS.INCINERATION OF CHROMATES WITH CHLORIDES OR CHLORINE BEARING ORGANICS MAY BE HAZARDOUS.

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:

FLOOD WITH WATER.USE OF CO2 OR FOAM MAY NOT BE EFFECTIVE.

REAGENT: POTASSIUM CHROMATE INDICATOR

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT REAGENT EXPOSURE IS LIKELY,
USE HIGH EFFICIENCY PARTICULATE CARTRIDGES

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP CONTAINER CLOSED WHEN NOT IN USE.

DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS***

CONTAINS AN OXIDIZER. AVOID ALL CONTACT WITH REDUCING AGENTS,
OILS, GREASES, ORGANICS AND ACIDS. DO NOT ALLOW TO DRY.

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

7.9 GALLONS DUE TO POTASSIUM CHROMATE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D007=CHROMIUM

...DOT HAZARD/UN# /ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:

THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: POTASSIUM CHROMATE(7789-00-6)

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: POTASSIUM CHROMATE(7789-00-6) , 11.0-15.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

NFPA/HMIS : HEALTH - 2 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

Frederick Gumm Chemical Company, Inc.
538 FOREST STREET, KEARNY, NEW JERSEY 07032

U.S. DEPARTMENT OF LABOR
WORKPLACE STANDARDS ADMINISTRATION
BUREAU OF LABOR STANDARDS
MATERIAL SAFETY DATA SHEET

FORM NO. 201-991-4142

MDC CONTAINER NO.

SECTION I: MATERIAL AND MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME Frederick Gumm Chemical Co., Inc.		EMERGENCY TELEPHONE NO. 201-991-4142
ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP CODE) 538 Forest Street Kearny, N.J. 07032		
CHEMICAL NAME AND SYNONYMS Potassium Cyanide		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY		FORMULA KCN

SECTION II: HAZARDOUS INGREDIENTS*

PAINTS, PRESERVATIVES/SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PAINTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES*

	%	TLV (UNITS)
Potassium Cyanide	100	12.5 mg/M ³

SECTION III: PHYSICAL DATA

MELTING POINT (°F)	N.A.	SPECIFIC GRAVITY (H ₂ O = 1)	N.A.
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE (_____ = 1)	N.A.
SOLUBILITY IN WATER	Complete		

APPEARANCE AND ODOR White crystalline solid. Faint almond odor.

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	None	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	N.A.			

TRW-01936

SPECIAL FIRE FIGHTING PROCEDURES Do not use water to extinguish fire in vicinity of potassium cyanide.

ADDITIONAL FIRE AND EXPLOSION HAZARDS Contact with acids releases highly toxic & flammable hydrocyanic acid gas.

PLEASE DO NOT USE GENERALIZATIONS, SUCH AS PETROLEUM HYDROCARBONS, ALCOHOL, KETONES.
USE SPECIFIC CHEMICAL NAMES, SUCH AS METHANOL, BENZENE, PERCHLOROETHYLENE.

0908-3314

SECTION V: HEALTH HAZARD DATA

PERMIT VALUE

12.5 mg/M³

EFFECTS OF OVEREXPOSURE

Inhalation or ingestion may cause asphyxiation.

EMERGENCY AND FIRST AID PROCEDURES Call physician immediately. Break an amyl nitrite pearl in a cloth and hold under nose for 15 second intervals. Repeat as necessary using new amyl nitrite every 3 minutes. When conscious, give salt water to induce vomiting.

SECTION VI: REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	X

INCOMPATIBILITY (MATERIALS TO AVOID) Do not store with oxidizers. DO NOT STORE WITH ACIDS. Releases poisonous gas.

HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen cyanide gas when reacted with acids.

HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X

SECTION VII: SPILL OR LEAK PROCEDURES

ACTIONS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Treat with sodium hypochlorite solution to destroy cyanide.
Flush to sewer. Do not get on skin or in eyes.

WASTE DISPOSAL METHOD Treat to destroy cyanide. Dump to drain. Avoid contact with acids.

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE) Dust respirator when handling powder.

VENTILATION	LOCAL EXHAUST	SPECIAL
	Adequate ventilation	Oxygen mask for emergency
	MECHANICAL (GENERAL)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber or neoprene	Goggles

OTHER PROTECTIVE EQUIPMENT Rubber or neoprene aprons

SECTION IX: SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not store near acids. Keep dry. Avoid damaging container.

OTHER PRECAUTIONS

0908-3315

TRW-01937

PREPARED BY Thomas M. Kosorek, Chemist

December 7, 1979
DATE

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific requirements.

STARRETT CLEANER

QUICK IDENTIFIER
Common Name: (used on label and list)

DEPT 246 TOOL ROOM
RECD. 3/20/90

SECTION 1 -

Manufacturer's

Name **SURRY CHEMICALS, INC.**

Address

P. O. Box 1447, 241 Hickory Street
City, State, and ZIP
Mount Airy, NC 27030

Emergency
Telephone No.

(919) 786-4607

Other
Information
Calls

Signature of Person
Responsible for Preparation (Optional)

Date
Prepared 4-5-89

SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Nonionic Surfactants		N/A		2	68131-40-8
Dipropylene glycol monomethyl ether		100 ppm		2	34590-94-8
Potassium Hydroxide		N/A		.5	1310-58-3
EDTA		N/A		.25	64-02-8
Dye		N/A		.001	2610-10-8
Water				Balance	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point	212 d.F.	Specific Gravity (H ₂ O=1)	1.00	Vapor Pressure (mm Hg)	1.0
	Vapor Density (Air = 1)	1.0			
Solubility in Water	Disperses	Reactivity in Water	N/A		
Appearance and Odor	Clear chemical	Melting Point	N/A		

SECTION 4 - FIRE & EXPLOSION DATA

Flash Point	N/A F.	C.	Method Used	Flammable Limits in Air % by Volume	LEL Lower	N/A	UEL Upper	N/A
Auto-Ignition Temperature	N/A		Extinguisher Media	FOAM, CO ₂ , DRY CHEMICALS				
Special Fire Fighting Procedures	NONE KNOWN							
Unusual Fire and Explosion Hazards	NONE KNOWN							

SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)

Stability Unstable ☐ Conditions
Stable ☒ to Avoid

NONE KNOWN

Incompatibility
(Materials to Avoid)

STRONG ACIDS, OXIDING AGENTS

Hazardous
Decomposition Products

Hazardous May Occur ☐ Conditions
Polymerization Will Not Occur ☒ to Avoid

NONE KNOWN

SECTION 6 - HEALTH HAZARDS

1. Acute 2. Chronic

None expected when used as directed. Detergent action causes skin dryness and irritation.

Signs and
Symptoms of Exposure

NONE KNOWN

Medical Conditions Generally
Aggravated by Exposure

NONE KNOWN

Chemical Listed as Carcinogen
or Potential Carcinogen

National Toxicology Yes ☐
Program No ☒

I.A.R.C. Yes ☐
Monographs No ☒

OSHA Yes ☐
No ☒

Emergency and
First Aid Procedures

See below

ROUTES
OF
ENTRY

1. Inhalation

None known.

2. Eyes

Flush with water, get medical attention.

3. Skin

Wash with water.

4. Ingestion

Get medical attention.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken
in Handling and Storage

Handle with due care.

Other
Precautions

NONE KNOWN

Steps to be Taken in Case
Material is Released or Spilled

Small spills - flush to nearest chemical sewer after

neutralization with 6N HCL or vinegar. Large spills: absorb on suitable

Waste Disposal
Methods (Consult federal, state, and local regulations)

material, scoop up and neutralizr with 6N HCL

or vinegar. Disposal must be in accordance with local, state and fed. regulations

SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection
(Specify Type)

Ventilation

NONE REQUIRED

Local
Exhaust

Mechanical
(General)

Special

Other

Protective
cloves

NONE REQUIRED

Eye
Protection

Required if mist exceeds 1 ppm as KOH
CHEMICAL SAFETY GLASSES

Other Protective
Clothing or Equipment

NONE REQUIRED

Work/Hygienic Practices

0908-3317

TRW-01939

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

BETZ LABORATORIES, INC
4836 SUMMITTOWN ROAD, TREVINO, PA 19047
BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-300-877-1940

REAGENT POTASSIUM IODIDE-IODATE CODE 437 (PAGE 1 OF 3)
MASS REG # EFFECTIVE DATE 02-16-91
PRINTED: 01-31-92
REVISIONS TO SECTIONS: -;EDIT APPENDIX

REAGENT APPLICATION FIELD TEST REAGENT

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC REAGENT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED UNDER SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 10.5	ODOR: NONE
FL.PT.(DEG F):	>200	SETA(CC)
VAPOR PRESSURE(mmHG):	ND	SP.GR.(70F)OR DENSITY: 1.0
VISC cps70F:	ND	VAPOR DENSITY(AIR=1): ND
EVAP.RATE: <1	ETHER=1	%SOLUBILITY(WATER): 100
PHYSICAL STATE:	LIQUID	APPEARANCE: COLORLESS
		FREEZE POINT(DEG.F): ND

-----SECTION 3-----REACTIVITY DATA-----

STABLE. BETZ TANK CLEAN-OUT CATEGORY 'A'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

REAGENT: 10% SODIUM HYDROXIDE - 100/100

- --SECTION 4.000 - - - - -ACQUAINTANCE HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE INFECTIONS 144

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS 414

MISTS, AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE **

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMP TOME OF EXPOSURE ***

MAY CAUSE EYE, SKIN, AND/OR RESPIRATORY TRACT IRRITATION.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT: 4

REMOVE CONTAMINATED CLOTHING WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT : 55

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

GENERAL-DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM

SPECIFIC- DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

GENERAL-VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

SPECIFIC- FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

GENERAL-WATER CONTAMINATED WITH THIS REAGENT MAY BE SENT TO A SANITARY SEWER, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT

REAGENT(AS IS)- INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

REAGENT: POTASSIUM IODIDE-IODATE

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT REAGENT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE, REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP CONTAINER CLOSED WHEN NOT IN USE.

DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS***

NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE

IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312

NFPA/HMIS : HEALTH - 1 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B



MATERIAL SAFETY DATA SHEET

J. T. Baker Chemical Co., 222 Red School Lane, Phillipsburg, N.J. 08865

SECTION I. IDENTIFICATION OF PRODUCT

CHEMICAL NAME Potassium Iodide	FORMULA KI
SYNONYM OR CROSS REFERENCE	CAS NO: 7681-11-0

SECTION II. HAZARDOUS INGREDIENTS

MATERIAL	NATURE OF HAZARD
----------	------------------

SECTION III. PHYSICAL DATA

BOILING POINT 1330°C.	MELTING POINT 686°C.
VAPOR PRESSURE	SPECIFIC GRAVITY 3.13
VAPOR DENSITY (AIR=1)	PERCENT VOLATILE BY VOLUME (%)
WATER SOLUBILITY Soluble	EVAPORATION RATE (_____ = 1)

APPEARANCE
Colorless or white cubical crystals, granules or powder

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (method used)	FLAMMABLE LIMITS	Lower	Upper
FIRE EXTINGUISHING MEDIA			
SPECIAL FIRE-FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARD			

SECTION V. HEALTH HAZARD

THRESHOLD LIMIT VALUE orl-mus LDLO: 1862 mg/kg
HEALTH HAZARDS Harmful if swallowed
FIRST AID PROCEDURES If swallowed, if conscious, immediately induce vomiting and call a physician.

CHEMICAL NAME

SECTION VI. REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (materials to avoid)

Alkaloidal salts, chloral hydrate, metallic salts.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII. SPILL AND DISPOSAL PROCEDURES

SPILLS

Carefully sweep up and remove. Flush spill area with water.

DISPOSAL

Dispose at a landfill site if local environmental regulations permit.

SECTION VIII. PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)

Use respiratory protection if dusts are involved.

VENTILATION	LOCAL X	SPECIAL
	MECHANICAL (general) X	OTHER

PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Safety glasses
------------------------------------	----------------------------------

OTHER PROTECTIVE EQUIPMENT

Approved protective work clothes.

SECTION IX. HANDLING AND STORAGE PRECAUTIONS

STORAGE & HANDLING

Store in well-closed, light-resistant container in a dry area. Avoid contact with eyes and prolonged contact with skin. Wash thoroughly after handling.

SECTION X. MISCELLANEOUS INFORMATION

Date issued: 8/3/83

Approved by R. M. Mitchell
Manager, Quality Assurance

TRW-01944

Revision No. & Date issued:

The information provided in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the users responsibility to determine the suitability of this information for the adoption of a necessary. We reserve the right to revise Material Safety Data Sheets from time to time as new technical information user has the responsibility to contact the company to make sure that the sheet is the latest one issued.

0908-3322

M A T E R I A L S A F E T Y D A T A S H E E T
E4 SCIENCE PREPARATION DATE OCT 27, '87
A DIVISION OF EM INDUSTRIES
111 WOODCREST
CHERRY HILL, N.J. 08034-0395

INFORMATION PHONE NUMBER.:
(609) 354-9100
CHEMTEC EMERGENCY NUMBER:
1-800-424-9300

EPA HAZARD RATINGS

HEALTH 2 FLAMMABILITY 0
REACTIVITY : 0 SPECIAL HAZARDS.: OXY

SECTION I - GENERAL INFORMATION

CATALOG NUMBER(S): PX1520 PX1521 PX1525 5055
CHEMICAL NAME..... ~~POTASSIUM~~
TRADE NAME..... NITRATE OF POTASH; SALTPETER
C.A.S. NUMBER..... 7757-79-1
CHEMICAL FAMILY..: INORGANIC SALT
FORMULA..... KNO3
MOLECULAR WEIGHT.: 101.11
DOT SHIPPING NAME: N/A
DOT NUMBER..... N/A

SECTION II - HAZARDOUS INGREDIENTS

-NONE OTHER THAN SPECIFIED PRODUCT

SECTION III- PHYSICAL DATA

BOILING POINT (C 760 MM HG): 400C DE
MELTING POINT (C).....: 333C
SPECIFIC GRAVITY(H₂O = 1).....: 2.11
VAPOR PRESSURE..(MM HG).....: N/A 20C
PERCENT VOLATILE BY VOL (%): N/A
VAPOR DENSITY (AIR=1).....: N/A
EVAPORATION RATE (BUAC=1).....: N/A
SOLUBILITY IN WATER (%).....: 26
APPEARANCE AND ODOR.....: WHITE CRYSTALLINE
ODORLESS POWDER

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT (F).....: NONE
FLAMMABLE LIMITS LEL %: N/A
FLAMMABLE LIMITS UEL %: N/A
EXTINGUISHING MEDIA.....:

USE ANY SUITABLE FOR ADJACENT MATERIAL

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WEAR SELF-CONTAINED BREATHING APPARATUS
FIRE FIGHTING PROC.....:
THERMAL DECOMPOSITION PRODUCES HIGHLY TOXIC FUMES
FIRE & EXPL. HAZARDS...:
-DANGEROUS FIRE AND EXPLOSION HAZARD WHEN SHOCKED OR HEATED

SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)
ACGIH TLV/OSHA PEL (TWA).....:
& PEL: NONE ESTABLISHED
TOXICITY DATA.....:
-URL-RAT LD50: 3750 MG/KG
SYMPTOMS OF EXPOSURE:
-INGESTION OF LARGE QUANTITIES MAY CAUSE VIOLENT GASTROENTERITIS
PROLONGED EXPOSURE TO SMALL AMOUNTS MAY CAUSE ANEMIA,
METHEMOGLOBINEMIA, NEPHRITIS
MAY BE IRRITATING ON CONTACT WITH SKIN, EYES OR MUCOUS MEMBRANES
MEDICAL COND. AGGRAVATED BY EXP: DATA NOT AVAILABLE.
ROUTES OF ENTRY.....: INHALATION, INGESTION OR SKIN CONTACT.
CARCINOGENICITY.....: SEE COMMENTS, SECTION X; IF NO INFORM-
ATION APPEARS, THE MATERIAL IS NOT LISTED AS A CANCER CAUSING AGENT.
EMERGENCY FIRST AID.....:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE
SKIN: WASH THOROUGHLY WITH SOAP AND WATER
EYES: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER
INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION
IF BREATHING HAS STOPPED
INGESTION: IF CONSCIOUS, INDUCE VOMITING

SECTION VI - REACTIVITY DATA
STABILITY.....: YES
CONDITIONS TO AVOID:
-MAY CAUSE FIRE, EXPLOSION ON CONTACT WITH ORGANIC MATERIALS
AVOID HEAT, CONTACT WITH COMBUSTIBLE MATTER
MATERIALS TO AVOID.....: () WATER () ACIDS
() BASES () CORROSIVES () OXIDIZERS
(X) OTHER (SPECIFY)-REDUCING AGENTS, ORGANIC MATERIAL
HAZARDOUS POLYMERIZATION.: DATA NOT AVAILABLE.
HAZARDOUS DECOMPOSITION.: -NOX, K2O

SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES
SPILL RESPONSE:
-TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL
WASTE DISPOSAL: TO BE PERFORMED IN COMPLIANCE WITH ALL CURRENT LOCAL,
STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION
VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION:
-MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD
OR WITH ADEQUATE VENTILATION

MSDS-PX1520 PAGE # : 02

PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO
PREVENT SKIN CONTACT
SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES

SECTION IX - SPECIAL PROTECTION INFORMATION

HANDLING & STORAGE

-KEEP CONTAINER TIGHTLY CLOSED
STORE IN A COOL, DRY AREA
DO NOT BREATHE DUST
DO NOT GET IN EYES
AVOID PROLONGED OR REPEATED SKIN CONTACT
DO NOT TAKE INTERNALLY
WORK/HYGIENIC PRACTICES: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE
INTERNALLY. EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

SECTION X - OTHER INFORMATION

COMMENTS.....:

-NFPA CAUTIONS: THIS MATERIAL IS AN OXIDIZER
TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY
PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS

REV. 12/86

REVISION HISTORY.....: 11/01/83, N/A
OCT 27, '87

N/A = NOT AVAILABLE:

MSDS-PX1520

PAGE # : 03



Cery Barsyk 9/6/84

TECHNIC INC.

POST OFFICE BOX 965, PROVIDENCE, R.I. 02901 (401) 781-6100
3265 N. RIDGE AVE., ARLINGTON HTS., ILL. 60005 (312) 262-2662
1170 HAWK CIRCLE, ANAHEIM, CAL. 92807 (714) 632-0200
1216 LUKE STREET, IRVING, TEXAS 75061 (214) 252-6595
TECHNIC PRECIOUS METALS (UK) LTD.
TECHNIC M & D IND. HONG KONG

CANADA/EUROPE

MATERIAL SAFETY DATA SHEET

Form similar to O.S.H.A - 20

SECTION I

MANUFACTURER'S NAME TECHNIC, INC.		EMERGENCY TELEPHONE NO. (401) 781-6100
ADDRESS (NUMBER, STREET, CITY, STATE, AND ZIP CODE) One Spectacle Street, Cranston, Rhode Island 02910		
CHEMICAL NAME AND SYNONYMS Potassium Silver Cyanide		TRADE NAME AND SYNONYMS POTASSIUM SILVER CYANIDE
CHEMICAL FAMILY Cyanide Complex	FORMULA Potassium Silver Cyanide	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS					
ADDITIVES			OTHERS		
OTHERS			FILLER METAL PLUS COATING OR CORE FLUX		
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (UNITS)
Complexed Cyanide					10 ppm as HCN

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N. A.	SPECIFIC GRAVITY ()	N. A.
VAPOR PRESSURE (MM HG.)	N. A.	PERCENT VOLATILE BY VOLUME (%)	N. A.
VAPOR DENSITY (AIR=1)	N. A.	EVAPORATION RATE (_____=)	
SOLUBILITY IN WATER	Soluble	PH	
APPEARANCE AND ODOR White powder; cyanide odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	None	FLAMMABLE LIMITS	LEI	UEI
EXTINGUISHING MEDIA	Water			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

TRW-01948

The information and recommendations contained herein are based upon data believed to be correct or warranty of any kind expressed or implied is made with respect to the information contained

0908-3326

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	10 ppm as hydrocyanic gas when mixed with strong acids.
EFFECTS OF OVEREXPOSURE	Weakness, dizziness, headache, vomiting to finally unconsciousness.
EMERGENCY AND FIRST AID PROCEDURES	Consult physician. Give prompt treatment. Maintain respiration. Administer amyl nitrite. Follow instructions for cyanide poisoning.

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	DO NOT mix with strong acids.
INCOMPATIBILITY (MATERIALS TO AVOID)		Strong acids	
HAZARDOUS DECOMPOSITION PRODUCTS HCN (hydrocyanic gas)			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	DO NOT mix with strong acids.

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Collect and send to Technic for refining - contains silver.	
WASTE DISPOSAL METHOD	
Contains complexed cyanide. Treat per local regulations.	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (SPECIFY TYPE) Optional			
VENTILATION	LOCAL EXHAUST	Yes	SPECIAL
	MECHANICAL (GENERAL)	Yes	OTHER
PROTECTIVE GLOVES	Yes	EYE PROTECTION	Yes
OTHER PROTECTIVE EQUIPMENT None			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in cool, dry area away from strong acids.	
OTHER PRECAUTIONS	

DATE: March, 1984 DIVISION:

SIGNATURE:

TRW-01949

U.S. DEPARTMENT OF LABOR
WAGE AND LABOR STANDARDS ADMINISTRATION
Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME Pfizer Chemicals Division	EMERGENCY TELEPHONE NO.
ADDRESS (Number, Street, City, State, and ZIP Code) 235 E. 42nd St., New York, N.Y. 10017	
CHEMICAL NAME AND SYNONYMS Rochelle Salt, NF, FCC	TRADE NAME AND SYNONYMS Potassium Sodium Tartrate, NF
CHEMICAL FAMILY Aliphatic	FORMULA $\text{KNaC}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$

SECTION II HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Not			BASE METAL Not		
CATALYST Applicable			ALLOYS Applicable		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FILLER		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Not Applicable					

SECTION III PHYSICAL DATA			
BOILING POINT (°F.) Not Applicable		SPECIFIC GRAVITY (H ₂ O = 1) 1.790	
VAPOR PRESSURE (mm Hg.) Not Applicable		PERCENT VOLATILE BY VOLUME (%) Not Applicable	
VAPOR DENSITY (AIR = 1) Not Applicable		EVAPORATION RATE (H ₂ O = 1) Not Applicable	
SOLUBILITY IN WATER at 26° C.	66gm./100 ml.	Melting Point 70°-80° C.	
APPEARANCE AND ODOR White crystalline powder, odorless, cooling saline taste.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used) Unknown	FLAMMABLE LIMITS Solid	LFL	UFL
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

PSN:

Pkg. Dia. (OD):

Gross Wgt.:

SECTION V HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	Not established (generally recognized as safe for use in foods).
EFFECTS OF OVEREXPOSURE	As with other mild organic acids, may be a mild skin irritant.
EMERGENCY AND FIRST AID PROCEDURES	
Flush skin contact with water and flush eye contact immediately with physiological saline or water. Get medical care for eyes.	

SECTION VI REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Not Applicable
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)		Not Applicable	
HAZARDOUS DECOMPOSITION PRODUCTS		Not Established	
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID Not Applicable
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
A normal brush down and wash up	
WASTE DISPOSAL METHOD	
Any normal disposal procedure	

SECTION VIII SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type)		None normally required	
VENTILATION	LOCAL EXHAUST	Satisfactory	
	MECHANICAL (General)	OTHER	
PROTECTIVE GLOVES	None normally required	EYE PROTECTION	safety glasses
OTHER PROTECTIVE EQUIPMENT		None	

SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	None
OTHER PRECAUTIONS	None



OCEANSM Network
EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Precipitation Hardening Stainless Steel		
CHEMICAL FAMILY Metal	FORMULA Mixture	TRADE NAME Alloy PH 15-7
DESCRIPTION Silver metallic solid		CAS NO. Not assigned/Mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.	
PROTECTIVE EQUIPMENT Eyes Goggles Gloves Impervious Other NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	VENTILATION REQUIREMENTS As required to keep airborne concentrations of chromium and nickel below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Iron	Fume 10 mg/m ³	No data	No data	Accumulation of dust in lung (siderosis)
Chromium	1.0 mg/m ³	No data	No data	Dermatitis, suspect carcinogen
Nickel	1.0 mg/m ³	No data	No data	Dermatitis, suspect carcinogen
Manganese	5 mg/m ³ (ceiling)	No data	TC ₁₀ 2.3 mg/m ³ (human)	Insomnia, CNS effects, fatigue

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD Not applicable	OSHA CLASSIFICATION Non-combustible solid	FLAMMABLE EXPLOSIVE LIMITS	LOWER N/A	UPPER N/A
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE None established for alloy (chromium 0.5 mg/m ³ , nickel 1 mg/m ³ ACGIH 1984).	
SYMPTOMS OF OVER EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, sneezing, congestion, metallic taste, ingestion may cause vomiting, lethargy, restlessness.	
SKIN	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION Dust: Not a likely route of exposure. If ingested, call a physician.	
INHALATION Dust or Fume: Remove victim to fresh air. Call a physician.	

Chemical

CAS No.

TRW-01952

0908-3330

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Nickel and chromium are suspect carcinogens (NTP)
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY	No data for alloy
ACUTE INHALATION LC 50	No data for alloy	EYE IRRITATION	Dust may be an irritant
		PRIMARY SKIN IRRITATION	Not known to be an irritant
PRINCIPAL ROUTES OF ABSORPTION			
Inhalation, dermal			
EFFECTS OF ACUTE EXPOSURE			
Dust may cause mechanical irritation of the eye. May cause respiratory irritation.			
EFFECTS OF CHRONIC EXPOSURE			
Although chromium and nickel are suspect carcinogens, there is no conclusive evidence that melting steel alloys is associated with cancer.			

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS

Not regulated

SECTION IX - REACTIVITY DATA

STABLE	<input checked="" type="checkbox"/> UNSTABLE	AT _____ °C _____ °F	HAZARDOUS POLYMERIZATION	MAY OCCUR
				WILL NOT OCCUR <input checked="" type="checkbox"/>
CONDITIONS TO AVOID Presence of carbon monoxide during melting.				
INCOMPATIBILITY (Material to Avoid) Strong acids, strong oxidizers				
HAZARDOUS DECOMPOSITION PRODUCTS Nickel carbonyl, chromium oxides, manganese oxides				

SECTION X - PHYSICAL DATA

MELTING POINT	No data	VAPOR PRESSURE	No data	VOLATILES	N.A.
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY (H ₂ O = 1) *		pH	N.A.	VAPOR DENSITY (Air = 1)	N.A.
* .282 lbs/cu. inch					

INFORMATION FURNISHED BY:

Environmental Hygiene
and Toxicology
(203) 789-5436

DATE

January 29, 1986

Department of Environmental Hygiene and Toxicology
(203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEANSM Network

EMERGENCY PHONE 1-800-OLIN-911



OCEANSM Network
EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Precipitation Hardening Stainless Steel		
CHEMICAL FAMILY Metal	FORMULA Mixture	TRADE NAME Alloy PH 17-7
DESCRIPTION Silver metallic solid		CAS NO. Not assigned/Mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Goggles Gloves Impervious Other NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of chromium and nickel below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Iron	Fume 10 mg/m ³	No data	No data	Accumulation of dust in lung (siderosis) Dermatitis, suspect carcinogen Dermatitis, suspect carcinogen Overexposure may cause lung fibrosis
Chromium	1.0 mg/m ³	No data	No data	
Nickel	1.0 mg/m ³	No data	No data	
Aluminum	15 mg/m ³	No data	No data	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD Not applicable	OSHA CLASSIFICATION Non-combustible solid	FLAMMABLE EXPLOSIVE LIMITS	LOWER N/A	UPPER N/A
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE None established for alloy (chromium 0.5 mg/m ³ , nickel 1 mg/m ³ ACGIH 1984).	
SYMPTOMS OF OVER EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, sneezing, congestion, metallic taste, ingestion may cause vomiting, lethargy, restlessness.	
SKIN	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

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SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Nickel and chromium are suspect carcinogens (NTP)
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY	No data for alloy
ACUTE INHALATION LC 50	No data for alloy	EYE IRRITATION	Dust may be an irritant
		PRIMARY SKIN IRRITATION	Not known to be an irritant
PRINCIPAL ROUTES OF ABSORPTION			
Inhalation, dermal			
EFFECTS OF ACUTE EXPOSURE			
Dust may cause mechanical irritation of the eye. May cause respiratory irritation.			
EFFECTS OF CHRONIC EXPOSURE			
Although chromium and nickel are suspect carcinogens, there is no conclusive evidence that melting steel alloys is associated with cancer.			

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X	UNSTABLE	AT	°C	°F	HAZARDOUS POLYMERIZATION	MAY OCCUR
							WILL NOT OCCUR X
CONDITIONS TO AVOID Presence of carbon monoxide during melting.							
INCOMPATIBILITY (Material to Avoid) Strong acids, strong oxidizers							
HAZARDOUS DECOMPOSITION PRODUCTS Nickel carbonyl, chromium oxides, aluminum oxides							

SECTION X - PHYSICAL DATA

MELTING POINT	No data	VAPOR PRESSURE	No data	VOLATILES	N.A.
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY (H ₂ O = 1) *		pH	N.A.	VAPOR DENSITY (Air = 1)	N.A.
* .282 lbs/cu. inch					

INFORMATION FURNISHED BY: Environmental Hygiene
and Toxicology
(203) 789-5436

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120 Long Ridge Road, Stamford, Connecticut 06904
OCEANSM Network
EMERGENCY PHONE 1-800-OLIN-911

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0908-3333

TRW-01955

Sept 721

MATERIAL SAFETY DATA SHEET : PREMALUBE-1

PAGE : 01

(071689-0265 -U0096373-4461) DATE OF ISSUE 11/11/87 SUPERSEDES 08/20/87

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A TRADE NAME & SYNONYMS PREMALUBE-1
 CHEMICAL FAMILY LUBRICANT FORMULA X<--MIXTURE
 MANUFACTURERS NAME: CERTIFIED LABS, DIV. OF NCH CORP.
 ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
 BOX 152170
 IRVING, TEXAS 75015
 PREPARED BY: MIKE DICKSON/T.S. CHEMIST PRODUCT CODE NUMBER 4461 EMERGENCY TELEPHONE NUMBER 214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
MOLYBDENUM DISULFIDE	SKIN IRR.	N/A	15MG/M3	1 7439-98-7

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	N/A	SPEC GRAVITY (H2O=1)	N/A
VAPOR PRESSURE (MM HG)	N/A	COLOR	BLACK
VAPOR DENSITY (AIR=1)	N/A	ODOR	OIL
PH @ 100%	N/A	CLARITY	OPAQUE

PREMALUBE-1

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

PERCENT VOLATILE BY VOLUME (%)	80%	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	INSOLUBLE		
VISCOSITY	925 SUS @ 100 F		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED) 425 C.D.C.	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA "ALCOHOL" X<--FOAM	X<--CO2	DRY X<--CHEMICAL	WATER X<--SPRAY
SPECIAL FIRE FIGHTING PROCEDURES			

IN CASES WHERE HIGH TEMPERATURE OF FLAMING OCCUR, AS WITH ALL PETROLEUM BASED PRODUCT, WEAR THE APPROPRIATE NIOSH APPROVED RESPIRATOR.

UNUSUAL FIRE & EXPLOSION HAZARDS

BE AWARE THAT PETROLEUM VAPORS ARE HEAVIER THAN AIR AND MAY COLLECT IN LOW AREAS OR AREAS INADEQUATELY VENTILATED.

NIFFA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):
 <--HEALTH <--FLAMMABILITY <--REACTIVITY <--SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

NO HAZARDOUS INGREDIENTS.

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)
 DIRECT CONTACT WITH EYES MAY CAUSE IRRITATION. PROLONGED SKIN CONTACT MAY CAUSE REDDENING OF SKIN OR IRRITATION AND POSSIBLE DISCOMFORT TO SENSITIVE SKIN.

- CHRONIC - (LONG TERM EXPOSURE)
 DIRECT CONTACT WITH EYES FOR PROLONGED PERIOD OF TIME CAN CAUSE CORNEAL DAMAGE. PROLONGED SKIN CONTACT MAY CAUSE REDDENING OF SKIN OR IRRITATION LEADING POTENTIALLY TO DERMATITIS.

PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION <-- ABSORPTION

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(CONTINUED)

SECTION V - HEALTH HAZARD DATA

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EMERGENCY & FIRST AID PROCEDURES

INHALATION:
REMOVE PERSON TO FRESH AIR. SEEK MEDICAL ATTENTION IF NECESSARY.

EYE CONTACT:
FLUSH WITH FRESH WATER FOR 15 MINUTES. SEEK MEDICAL ATTENTION.

SKIN CONTACT:
WASH WITH SOAP AND WATER. IF IRRITATION PERSISTS SEEK MEDICAL ATTENTION.

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER OR CITRUS JUICE IF AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN :

N/A

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

MOLYBDENUM DISULFIDE
NO TOXICITY DATA AVAILABLE.

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
-----------	------------	-------------	---------------------

N/A

INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS

CARBON MONOXIDE.

HAZARDOUS	X	WILL NOT OCCUR	<--MAY OCCUR	CONDITIONS TO AVOID
-----------	---	----------------	--------------	---------------------

POLYMERIZATION

SECTION VIII - SPILL OR LEAK PROCEDURES

PAGE : 04

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
ELIMINATE ALL SOURCES OF SPARKS OR IGNITION. TAKE UP SMALL SPILLS WITH ABSORBANT AND PLACE IN LABELED CONTAINERS FOR DISPOSAL. CONTAIN LARGE SPILLS AND PICK UP WITH A VACUUM TRUCK. PICK UP REMAINDER WITH ABSORBANT AND PLACE IN LABELED CONTAINERS.

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL POLLUTION REGULATIONS.

NEUTRALIZING AGENT

N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
GENERAL EXHAUST IS ADEQUATE.

RESPIRATORY PROTECTION
TYPICAL USE DOES NOT REQUIRE RESPIRATORS. HOWEVER, IN EMERGENCY SITUATION WHERE EXPOSURE SUCH AS WITH ACID SMOKE EXISTS FROM FIRE USE NIOSH APPROVED RESPIRATOR.

PROTECTIVE GLOVES
PVC GLOVES.

EYE PROTECTION
CHEMICAL GOGGLES DEPENDING ON SEVERITY OF EXPOSURE.

OTHER PROTECTION
SHOES OR BOOTS.

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE	120 F. <--MAX	32 F. <--MIN	INDOOR	HEATED	REFRIGERATED	OUTDOOR
			X			

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
STORE AT MODERATE TEMPERATURES.

OTHER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN.
READ AND FOLLOW ALL LABEL DIRECTIONS.
STORE ONLY IN LABELED CONTAINERS.

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 APPLICABLE REGULATIONS
 <--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

 SHIPPING NAME

 HAZARD CLASS | ID NUMBER | REPORT QTY

 LABELS | LIMITED QTY

 UNIT CONTAINER

 DDT SPS CONTAINER | NET EXPLOSIVE WT.

 AEROSOL PROPELLANT(S)

SECTION XII - REFERENCES

 N/A N/A N/A 80% N/A N/A N/A DIL
 OPAQUE BLACK 425 C.O.C. INSOLUBLE

 X XX
 IN CASES WHERE HIGH TEMPERATURE OF FLAMING OCCUR, AS
 BASED PRODUCT, WEAR THE APPROPRIATE NIOSH APPROVED R
 WITH ALL PETROLEUM
 ESPIRATOR.
 BE AWARE THAT PETROLEUM VAPORS ARE HEAVIER THAN AIR
 AND MAY COLLECT IN LOW AREAS OR AREAS INADEQUATELY VENTILATED.
 N/A

 OXIDIZERS. STRONG
 CARBON MONOXIDE.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
 ACCURATE IN LIGHT OF CURRENT FORMULATION, HOWEVER, NO WARRANTY
 IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
 OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

CERTIFIED LABS, DIV. OF NCH CORP. ASSUMES NO RESPONSIBILITY
 FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
 OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
 PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
 UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME American Pumice Company		EMERGENCY TELEPHONE NO. (505) 471-9132
ADDRESS (Number, Street, City, State, and ZIP Code) Galisteo Road, Santa Fe, New Mexico 87502		
CHEMICAL NAME AND SYNONYMS PUMICE		TRADE NAME AND SYNONYMS PUMICE
CHEMICAL FAMILY Mineral Oxide	FORMULA Primary Silicon Oxide	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
Pigments N/A			Base Metal N/A		
Catalyst N/A			Alloys N/A		
Vehicle N/A			Metallic Coatings N/A		
Solvents N/A			Filler Metal Plus Coating or Core Flux N/A		
Additives N/A			Others		
Others					
HAZARDOUS MIXTURES OF OTHER SOLVENTS				%	TLV (Units)

SECTION III - PHYSICAL DATA 54 to 23 lib. per

Boiling Point (°F)		Specific Gravity (H ₂ O = 1)	N/A
Vapor Pressure (mm Hg.)	N/A	Percent Volatile by Volume (%)	N/A
Vapor Density (Air = 1)		Evaporation Rate (_____ = 1)	
Solubility in Water Not Soluble			
Appearance and Odor Light gray powder or granules			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used)	Not Flammable Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

SECTION V - HEALTH HAZARD DATA	
Threshold Limit Value	N/A
Effects of Overexposure	N/A
Emergency and First Aid Procedures	

SECTION VI - REACTIVITY DATA			
Stability	Unstable		Conditions to Avoid
	Stable		
Incompatibility (Materials to avoid)			
Hazardous Decomposition Products		None	
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
Steps to be Taken in Case Material is Released or Spilled	Sweep and dispose as a land filling material.
Waste Disposal Method	No specific methods are needed. Material is considered safe.

SECTION VIII - SPECIAL PROTECTION INFORMATION			
Respiratory Protection (Specify type)		N/A	
Ventilation	Local Exhaust		Special
	Mechanical (General)		Other
Protective Gloves	None	Eye Protection	None
Other Protective Equipment		None	

SECTION IX - SPECIAL PRECAUTIONS	
Precautions to be Taken in Handling and Storing	Fine particles of pumice might irritate respiratory track.
Other Precautions	None

Material Safety Data Sheet

Devcon

DEVCON CORPORATION/30 ENDICOTT STREET/DANVERS, MASSACHUSETTS 01923/(617) 777-1100

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made to the information contained herein.

H	HEALTH	3
F	FLAMMABILITY	1
R	REACTIVITY	0

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

SECTION 1 - IDENTITY AND EMERGENCY INFORMATION

TRADE NAME

PUTTY HARDENER 0200

EMERGENCY

TELEPHONE NO. (617) 777-1100

CHEMICAL FAMILY

Polyamines and Modified Polyamines

OTHER INFORMATION CALLS:

DEVCON SAFETY DEPT. (617) 777-1100

OTHER PRODUCT INFORMATION The following health hazard data pertain to the hardener only. When fully cured, the mixed product is non-hazardous.

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	%	NATURE OF HAZARD
Triethylenetetramine (TETA)	112-24-3	30-60	Severe skin and eye irritant; respiratory irritant; skin sensitizer.
Polyamide Resin	12624-35-0	30-60	Severe eye irritant
Modified Aminoethyl Piperazine	70776-30-6	10-30	Skin and eye irritant

SECTION 3 - PHYSICAL DATA

BOILING POINT (F)	>450	VAPOR DENSITY (AIR = 1)	>1	EVAPORATION RATE (BuAc = 1)	<1
MELTING POINT (F)	n.a.	SPECIFIC GRAVITY	0.98	SOLUBILITY IN WATER	Appreciable
VAPOR PRESSURE (mm Hg) @ 20°C	<0.01	PERCENT VOLATILE BY VOLUME (%)	0	pH (5 wt. % in H ₂ O)	10-11
APPEARANCE AND ODOR Straw colored gel, mild ammonia like odor.					

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (F) (Method Used)	>200°F (TCC)	FLAMMABLE LIMITS IN AIR	LEL	UEL
			n.a.	n.a.
EXTINGUISHING MEDIA CO ₂ , dry chemical or water spray.				
SPECIAL FIRE FIGHTING PROCEDURES Firefighters should wear self-contained breathing apparatus and protective clothing.				
UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION 5 - HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES	
EYES	Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative.
SKIN	Immediately remove any contaminated clothing and wash thoroughly with soap and warm water.
INGESTION	Corrosive. Do not induce vomiting. Give large amounts of water or milk and transport to a medical facility.
INHALATION	Remove to fresh air. Contact a physician if symptoms persist.

SECTION 5 - HEALTH HAZARD DATA (Continued)

THRESHOLD LIMIT VALUE	ORAL LD ₅₀ (RAT)	DERMAL LD ₅₀ (RABBIT)	INHALATION LC ₅₀ (RAT)
Not established	TETA 2500mg/kg	TETA 820mg/kg	N/A
ROUTE OF EXPOSURE		EFFECTS OF OVEREXPOSURE	
ACUTE:			
EYES:	Severe irritation or burns.		
SKIN:	Severe irritation or burns, possible allergic response.		
INHALATION:	Respiratory irritation, possible allergic response.		
CHRONIC:	Possible sensitization from repeated skin contact.		
CARCINOGENICITY:	NTP?	ACGIH?	IARC MONOGRAPHS?
	No	No	No
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE Asthma, bronchitis			

SECTION 6 - REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	X Exposure to open flame or excessive heat.
INCOMPATIBILITY (Materials to Avoid)		
Strong oxidizing agents, acids and chlorinated organic compounds.		
HAZARDOUS DECOMPOSITION PRODUCTS		
Oxides of nitrogen, carbon and ammonia.		
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X Heat is generated when mixed with epoxy resin. Use caution when mixing large quantities.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Prevent skin and eye contact. Remove contaminated clothing. Discard contaminated leather articles such as shoes and belts. Absorb spillage on inert material and discard in suitable containers.
WASTE DISPOSAL METHOD	Remove to a waste disposal facility operating in compliance with state and local regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION

EYES:	Safety glasses with side shields or splash proof goggles
SKIN:	Chemical resistant rubber gloves and other protective clothing as required to prevent skin contact.
INHALATION:	None needed in normal use with proper ventilation. In poorly ventilated areas use NIOSH approved organic vapor masks.
VENTILATION:	Local exhaust is recommended for prolonged or repeated use. Effective mechanical ventilation is adequate for occasional use.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING, STORING, ETC.
Prolonged or repeated overexposure may cause sensitization and allergic response. Persons so effected should consult a physician. If sensitization is confirmed, avoid further exposure to material.
Keep hands away from eyes when handling material or before washing after use.
Wash thoroughly after using, particularly before eating or smoking.
Store in a cool, dry place.

D.O.T. PROPER SHIPPING NAME Corrosive Liquid, N.O.S.
D.O.T. HAZARD CLASS (IF APPLICABLE) Corrosive Material UN # 1750

REVISED
DATE: JULY 1936